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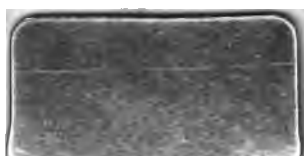
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ARTIS LOGICÆ

RUDIMENTA.



# ARTIS LOGICÆ

## RUDIMENTA,

FROM

THE TEXT OF ALDRICH,

WITH NOTES AND MARGINAL REFERENCES.

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BY THE

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## PREFACE.

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WHATEVER variety of opinion may exist as to the absolute merits of Aldrich's Logic, there are many considerations which recommend a new edition of that work, as by far the most convenient mode of supplying an acknowledged deficiency in the studies of the University. The majority of Teachers will probably agree with me in regarding the dry skeleton of a Latin Manual as better adapted to the discipline of beginners than any of the more elegant, but somewhat diluted, Essays of the present day: to which must be added the consideration, that Latin is the original language of many of the technicalities of the subject, which cannot be so conveniently learned through the medium of a translation. But among the Latin Compendia, that of Aldrich has long reigned almost exclusively in Oxford; nor would it be easy to select any rival manual of such decided superiority as to counterbalance the evils necessarily attendant on all violent changes in a long-established system. Deficient as the work unde-

niably is in many of the prominent features of the Scholastic Logic, its very deficiencies render it in some respects preferable to a more faithful exponent. The criticism of the present age has contributed much towards a more just appreciation of the merits of the mediæval Philosophy; but he must be a bold champion of reaction who would advocate the complete disinterment of the Logic of the Schools. Who would desire now to oppress the Student with the heavy burden of modals<sup>a</sup>, or to bewilder him with the mysteries of *Suppositio*,

<sup>a</sup> I would not, however, be understood as advocating the absolute exclusion of modality from the domain of Logic. Sir W. Hamilton's remarks are indeed conclusive with regard to that stupendous absurdity, the determination of the quantity of an indefinite Proposition from matter *understood*, and to be supplied by the Logician. But they are not applicable to the only modality acknowledged by Aristotle,—a modality *expressed* in a Proposition, and necessitating, under certain conditions, a corresponding modification of its immediate or mediate consequents. In this respect, modality stands on precisely the same footing as truth and falsehood. It is beyond the province of the Logician to decide whether any given proposition is *per se* true or false, necessary or contingent. But to determine under what conditions necessity in a conclusion follows from an assumed necessity in a premise, is as purely Logical as the canon, that the truth of a conclusion follows from the assumed truth of its premises, or the falsehood of a premise from the assumed falsehood of the conclusion. The same may be said of the inferences of conversion and opposition. But it does not follow that modals, though scientifically admissible, are wholesome food for the tyro in Logic, any more than they were of old for the animal whose fastidiousness is commemorated in the scholastic saying, *de modalibus non gustabit asinus*.

*Ampliatio, Restrictio*, and the whole farrago of the *Parva Logicalia*? Omissions of this character may, with equal probability and more charity, be attributed to the sound judgment of the University, than to the decline of the Professorial System and the incompetency of College Tutors<sup>b</sup>.

On the other hand, it must be confessed that there is much to be added to this or any other Compendium, to enable it to meet the demands of the existing University Examinations. This will at once be admitted by all who have had any recent practice in tuition; it may be easily ascertained by any who will take the trouble of comparing the contents of the book with those of any of the present Examination papers. To this deficiency, the increasing study of the original writings of Aristotle has not a little contributed. But the transition from the bare text of Aldrich to that of Aristotle is far too abrupt to be beneficial to the Student. Occasionally indeed he may recognise an old friend in a new dress; but the difference of language, order, and manner of treatment will conceal from the unpractised eye most of the passages in which his Latin successors have attempted any thing more than a bare translation of the words of the Stagirite.

In this respect, it is hoped that the numerous references to, and quotations from, the *Organon*, which will be found in the following pages, will

<sup>b</sup> See Edinburgh Review, No. 115. p. 195.

contribute in some degree towards a most important object,—the clear discrimination between those portions of the system which belong to the original work of Aristotle, and those for which we are indebted to subsequent Logicians. For a like reason, in my references to the latter, I have occasionally endeavoured to furnish some information as to the author and the period of the innovation. Nothing is more strongly to be reprehended than the slovenly practice of referring in general terms to the Logic of the Schoolmen; as if every individual of that body had written a distinct treatise on the subject, or as if those who have were a race of harmonious commentators, whose labours exhibit a supernatural uniformity, such as tradition narrates of the translators of the Septuagint. What would be thought of a reference in general terms to the doctrine of the Greek Philosophers? Yet Aristotle scarcely departed more widely from Plato, than did Abelard from William of Champeaux, or Occam from Scotus. In some cases it is indispensable to the right understanding of doctrines and modes of expression, to know when and by whom they were first introduced into Logic. If, for example, as in the treatment of the Predicables and of Definition, we find language held neither by Aristotle nor by Porphyry, expressly insisted on by one sect of the Schoolmen, and as expressly repudiated by another, there can be no doubt what views, whether right or wrong in themselves,

must be adopted as a necessary basis for the interpretation of that language.

It must be confessed, that minute references do not contribute to ornamental typography, and may sometimes interfere with the flow of a sentence. But these disadvantages are more than compensated by the opportunity afforded to the reader of consulting authorities, of confirming what is right, and correcting what is wrong. Who can controvert a statement for which no more definite authority is cited than some one of a series of writers extending over five centuries<sup>c</sup>?

The origin, however, of some of the characteristics of the Scholastic Logic cannot be determined with accuracy. The memorial verses, for example, in which Scholasticism may claim an almost exclusive property, appear in the middle of the twelfth century, in the *Summulæ Logicales* of Peter of Spain, afterwards Pope John XXI. but he does not lay any claim to the invention; indeed, some of them are also found in the writings of his contemporary, Aquinas. As however the former

<sup>c</sup> The age of the Scholastic Philosophy may be divided into three periods: 1. its infancy, from the end of the eleventh to the middle of the thirteenth century; 2. its prime, from the latter period to the middle of the fifteenth; and 3. its decline, extending to the end of the sixteenth century. (Cousin, Abelard, p. lxxv.) The extant logical writings commence with those of Abelard, in the early part of the twelfth century; the reaction in Logic began with Laurentius Valla, towards the middle of the fifteenth century.

work has all the appearance of a mere compilation from previous authorities<sup>d</sup>, it may be regarded as furnishing the earliest evidence concerning these remarkable specimens of ingenuity.

Of my own very imperfect acquaintance with the post-Aristotelian Logicians, I am well aware. But when the alternative lies between the postponement of the present work to an almost indefinite period, and the attempting it from such resources as I can at present command, the necessity that has long been felt for something of the kind, will, I trust, be allowed as some apology for the deficiencies of the execution.

One other point remains to be noticed. In commenting, whether for explanation or correction, on the language of a manual so brief as that of Aldrich, there is no tutor but must have felt the difficulty of attaining the happy medium between dogmatic assumption on the one hand and prolix discussion on the other. It is possible so to bewilder a pupil with premises that he shall utterly lose sight of the conclusion; it is possible so to overwhelm him with assertion, as to leave him no choice but that of blind submission to the *ipse dixit* of his tutor or the *ipse scripsit* of his text-book. The same

<sup>d</sup> Five treatises out of the seven composing the *Summulae* are little more than a translation from the Greek of Michael Psellus. In the latter work, however, the mnemonics do not appear, with the exception of one for the opposition of modals, (δουλούμεναι, ἰλιάδες, παρνασίον, ἐκτρέχουσι,) corresponding to the *Purplea*, *Iliace*, *Amabimus*, *Edentuli*, of the Latin Logicians.

difficulty meets the editor. In controverting the positions of a work which for more than a century and a half has enjoyed the sanction of the University, somewhat more of the *verecunde dissentio* is becoming than can always be comprised within the necessary limits of a foot-note. The further discussion of such points in an Appendix has in some instances unavoidably produced a certain amount of repetition. This however, though injurious to the form of the work, will, it is hoped, not render it the less serviceable to that not inconsiderable class of students

οἷς οὐδὲ τρεῖς λέγοντες ἐξικνούμεθα.

A few passages omitted in recent editions of the Compendium have been restored in the present. This, however, has been done but sparingly. An account of the *Arbor Porphyriana* has been transferred to the first chapter from its original place in the *Penus Logica*. The obvious utility of the insertion will, it is hoped, warrant the liberty in this single instance taken with the text.

The references to Aristotle have been adapted to the Oxford reprint of Bekker's text. In Germany a custom seems to be gaining ground of referring to the pages of the Berlin edition, but that work has not been sufficiently circulated here to make the example convenient to follow. Of the Isagoge of Porphyry, Buhle's edition has been used. With the Greek Commentators, my chief acquaintance has been made through the medium of



the Berlin Scholia collected by Brandis, to which, as the most accessible edition, reference has been made. Boethius is quoted from the Basel edition of 1570. The other quotations will in most instances speak for themselves. Of the writers of the present day, I must express my particular obligations to Sir William Hamilton<sup>e</sup>, to MM. St. Hilaire<sup>f</sup>, Trendelenburg<sup>g</sup>, Waitz<sup>h</sup>, and Biese<sup>i</sup>.

\* Edinburgh Review, No. 115. Reid's Works, Edinburgh, 1846.

<sup>f</sup> De la Logique d'Aristote, Paris, 1838. A work in which a comprehensive design and lucid exposition are unfortunately accompanied by some inaccuracy of detail. Logique d'Aristote, traduite en Français pour la première fois. Paris, 1839—1844.

<sup>g</sup> Elementa Logices Aristotelicæ, Editio Altera, Berolini, 1842. Erläuterungen zu den Elementen, Berlin, 1842. Aristotelis de Anima Libri, Jenæ, 1833.

<sup>h</sup> Aristotelis Organon, edidit Theodorus Waitz, Lipsiæ, 1844—1846.

<sup>i</sup> Die Philosophie des Aristoteles, Berlin, 1835—1842.

## INTRODUCTION.

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ALTHOUGH the writings of Aristotle are the source from which the science of Logic is principally derived, it is remarkable that there is no single name sanctioned by the Stagirite himself, under which can be comprehended either the whole collection of treatises known by the name of the *Organon*, or the entire subject of which they treat. *Λογική*, as the name of an art or science, is not to be found in his works; and the cognate terms, *λογικὸς* and *λογικῶς*, are used in a very different sense from that which has subsequently been given to them. The *logical syllogism* of Aristotle is opposed, sometimes to the *analytical*, sometimes to the *physical* syllogism; and signifies a process of reasoning from general principles of probability, as distinguished from one of which the principles are elicited by special contemplation of a given object or notion\*. It is therefore opposed alike to the demonstrative reasoning, in which necessary truths are resolved into the axiomatic principles on which they depend, and to that by which physical phenomena are referred to general laws of nature.

The word *διαλεκτική* is equally limited in its Aristotelian sense; though this term underwent considerable modi-

\* See Biese, vol. i. p. 133. Waitz, *Organon*, vol. ii. p. 353. Trendelenburg, *Elementa*, p. 47.

fication at the hands of previous philosophers. A slight sketch of these may be useful, as shewing how much, or rather how little, was effected in Logic by the predecessors of Aristotle. By *διαλεκτική* was originally signified only the art of communicating knowledge in a colloquial form, without any particular reference to the matter or kind of knowledge conveyed. We have the authority of Aristotle, if we can trust the citation of Diogenes Laertius, for attributing the invention of Dialectic to Zeno the Eleatic<sup>b</sup>. By this is probably only meant, that Zeno was the first to employ dialogue as the medium of philosophical instruction; his predecessors of the same school, Xenophanes and Parmenides, having communicated their doctrines in verse. The dialectic method was afterwards extensively used by different schools, and for different purposes, which ultimately obtained distinctive names. Aristotle<sup>c</sup> enumerates four different kinds of reasoning, to which the colloquial form (*τὸ διαλέγεσθαι*) was applied—*λόγοι διδασκαλικοί, διαλεκτικοί, πειραστικοί, and ἱριστικοί*. The first are demonstrative reasonings, from the proper and axiomatic principles of a given subject<sup>d</sup>. The second, or dialectic reasonings, in the Aristotelian sense of the term, are those derived from general principles of probability, such as the opinions of the majority of mankind, or of philosophers. The third are only a special application of probable reasonings to expose the ignorance of pretenders in science. The fourth are fallacious reasonings, from apparent, but not real, probabilities. In a

<sup>b</sup> Vit. Phil. ix. 25. But in another passage (iii. 48.) he quotes Aristotle, as attributing the first *written* dialogues to Alexamenus of Styra. Cf. Athenæus, xi. 102.

<sup>c</sup> Soph. Elench. 2. 1.

<sup>d</sup> Διδασκαλικοί μὲν οἱ ἐκ τῶν οἰκείων ἀρχῶν ἐκάστου μαθήματος καὶ οὐκ ἐκ τῶν τοῦ ἀποκρινομένου δοξῶν συλλογισόμενοι, δεῖ γὰρ πιστεύειν τὸν μανθάνοντα. Cf. Anal. Post. i. 2. 7. ἀξιῶμα ἦν ἀνάγκη ἔχειν τὸν δτιοῦν μαθησόμενον.

subsequent passage, he distinguishes between *ἐριστικοί* and *σοφιστικοί*; the former being such as employ fallacy merely for a display of skill; the latter, for pecuniary profit. Hence he defines *σοφιστική* to be *χρηματιστική τις ἀπὸ σοφίας φαινόμενη*\*. These distinctions, however, will be of comparatively late origin; after the various applications of the original method of Zeno had rendered specific names necessary.

The eristic or sophistic was, as might naturally be expected, the earliest of these special developments of the dialectic method. The arguments of Zeno himself had no small affinity to sophistry; and the state of philosophy at that period was such as naturally to promote further advance in the same direction. The conflicting opinions of the three great pre-Socratic schools, the Ionian, the Pythagorean, and the Eleatic; the one-sided and exclusive character of their principles, combined with the universality of their aims, and the consequent failure of each in the attempt to resolve difficulties beyond their respective provinces—all this could hardly fail to produce a spirit of scepticism, which should end in denying the possibility of attaining to truth at all†. Such was the object of the

\* Soph. Elench. 11. 1, 5.

† In this respect, a not un instructive parallel might be drawn between the Sophists of Greece and the modern disciples of the "Positive Philosophy." Both look upon the history of the past as a history of conflicting errors; as a series of failures produced by the unattainable nature of the object, not by the exclusiveness and consequent inadequacy of the methods. Both regard the course of philosophy as an endless circle, not as an irregular, but onward, progress. The Sophist resolved all knowledge into sensation, and gave even to that only a subjective truth: the Positive Philosopher reduces it to a registered order of sensations, degrading causes into laws, and necessity into a constant succession of phenomena. It is as if one school of exclusives had insisted on stopping their ears to hear with their eyes; another, with equal pertinacity, had shut their eyes to see with their ears; and some independent Critic, assuming himself to be "settled,

eristic method of the Sophists. They employed it chiefly to enforce their leading dogma of the unreality of all knowledge, speculative or practical. Accordingly, they endeavoured, by ingenious applications of the dialectic mode of reasoning, to involve those with whom they disputed in self-contradictions and absurdities; and thus to shew that, whatever principles we start from, paradox and inconsistency will be the invariable result.

On the other hand, the method of Socrates partook largely of the *πειραστική* or tentative, which Aristotle defines as follows, *ἡ γὰρ πειραστική ἐστὶ διαλεκτική τις καὶ θεωρεῖ οὐ τὸν εἰδόμενον ἀλλὰ τὸν ἀγνοοῦντα καὶ προσποιούμενον*. The opinion which Socrates entertained of the professions of his contemporaries appears in his well-known explanation of the Oracle which pronounced him the wisest of men<sup>s</sup>; and the same conviction and exposure of ignorance and pretension constantly appears in the Platonic dialogues. For this purpose he insists on the superior fitness of his own dialectic to the longer mode of reasoning employed by some of the Sophists, and says<sup>b</sup> that many orators can discourse ably at length, but that if examined by searching questions, they are, like written books, unable to reply. Indeed, the principal object of the dialogue in which this declaration occurs seems to be to shew that the would-be teacher of virtue is ignorant of the nature of that which he professes to teach, and to evince the superiority of the Socratic over the sophistical use of Dialectic<sup>1</sup>.

To Socrates, according to the testimony of Aristotle, may be attributed two discoveries in Logic, Induction landed, and fortified in the certainty of truth; and from thence beholding the errors, perturbations, labours, and wanderings up and down of other men," had judiciously pronounced either seeing or hearing to be impossible.

<sup>s</sup> Plato, *Apol.* p. 21.

<sup>b</sup> Protagoras, p. 329.

<sup>1</sup> Schleiermcher's Introduction, p. 93. (Dobson's translation.)

and Definition<sup>k</sup>. Both of these he exhibited in the dialectic form. His induction, however, more nearly resembles the *example* of Aristotle than the induction properly so called. It consisted in submitting to his adversary a number of cases similar to the one which he desired to prove; and having gained his consent to these, he inferred in an interrogative form his own conclusion. As a specimen, may be taken the following argument from the Gorgias. ΣΩ. Τί οὖν; ὁ τὰ τεκτονικὰ μεμαθηκώς τεκτονικός, ἢ οὐ; ΓΟΡ. Ναί. ΣΩ. Οὐκοῦν καὶ ὁ τὰ μουσικὰ μουσικός; ΓΟΡ. Ναί. ΣΩ. Καὶ ὁ τὰ ἱατρικὰ ἱατρικός; καὶ τᾶλλα οὕτω κατὰ τὸν αὐτὸν λόγον· ὁ μεμαθηκώς ἕκαστα τοιοῦτός ἐστιν οἷον ἡ ἐπιστήμη ἕκαστον ἀπεργάζεται; ΓΟΡ. Πάνυ γε. ΣΩ. Οὐκοῦν κατὰ τοῦτον τὸν λόγον καὶ ὁ τὰ δίκαια μεμαθηκώς δίκαιος; ΓΟΡ. Πάντως δήπου<sup>l</sup>.

This argument possesses both the characteristics which distinguish example from induction. It does not profess to give a complete enumeration of individual instances, and it appends to the general conclusion a deductive reasoning to an additional one. Such reasoning has no place in Logic properly so called. That science recognises no inference that is not necessitated by the laws of thought; whereas in instances like the above it is obvious that the premises may be true, and yet the conclusion false<sup>m</sup>. Or two specimens may be found both complying with the above form, one of which shall carry conviction to every reasonable man, while the other is utterly worthless. Its *moral* force, then, may vary "from the highest moral certainty to the very lowest presumption<sup>n</sup>." Its *logical* value is—zero.

<sup>k</sup> Metaph. xii. 4. δ. Δύο γὰρ ἐστὶν ἃ τις ἂν ἀποδοίη Σωκράτει δίκαιος, τοὺς τ' ἐπακτικούς λόγους καὶ τὸ δρίξεσθαι καθόλου.

<sup>l</sup> Gorgias, p. 460.

<sup>m</sup> Of which the same example is adduced as a specimen by Boethius, de Syll. Cat. lib. ii. Opera, p. 600.

<sup>n</sup> Butler, Introduction to Analogy.

As regards the definitions of Socrates, they may be illustrated by the distinction which we find him drawing between declaring the essence of thing, and declaring its qualities; between determining what a thing is in itself, and what attributes it possesses. Thus, in the *Gorgias*, Polus being asked what art Gorgias professes, replies, "the best of all arts." On which Socrates remarks, ἀλλ' οὐδεὶς ἐρωτᾷ, ποία τις εἴη ἡ Γοργίου τέχνη, ἀλλὰ τίς°. Thus far, by constantly insisting on the distinction between essential and non-essential predication, Socrates may be regarded as having furnished the germ of the theory of definition developed by Aristotle. Except in this respect, we cannot regard Socrates as having contributed to the *science* of Logic. Whatever may be the importance of his method of induction in the *art* of persuasion, it has no place in a scientific analysis of the mental operations.

In Plato, Dialectic assumes a higher position. Though still retaining its primary sense, as the art of communicating, or rather eliciting, knowledge colloquially, it is connected with a peculiar object matter, and that the highest. It is the science of the eternal and immutable, which is cognisant of the essence of things, of Being in general and its attributes; and thus it has insight into those universal principles upon which all other knowledge is dependent. Thus considered, the Dialectic of Plato, though differing in form, is in object identical with the First Philosophy or Metaphysics of Aristotle. Socrates had previously represented his art as an intellectual midwifery, useful in delivering the pregnant soul, but of no service to the barren one<sup>p</sup>. But Socrates, if we may trust the positive testimony of Aristotle, had not recourse to a separate world of ideas, to find a divine father for the children at whose birth he assisted<sup>q</sup>. But in Plato's

° *Gorgias*, p. 448.

<sup>p</sup> *Theæt.* p. 149.

<sup>q</sup> *Metaph.* xii. 4. 5. 'Ἄλλ' ὁ μὲν Σωκράτης τὰ καθόλου οὐ χωριστὰ ἐποίει

view, the burden with which the soul travailed was not the offspring of this world: she came into life already pregnant with truth, and the things of sense serve only to awaken an imperfect recollection of those ideal archetypes which she had known in her previous state. Hence the office of the Platonic Dialectic, to bring into form and order

“ Those shadowy recollections  
Which, be they what they may,  
Are yet the fountain light of all our day,  
Are yet a master light of all our seeing.”

The world of ideas he held to be so connected, that a diligent inquirer commencing with the remembrance of one may ultimately discover all<sup>r</sup>; and therefore he considered it possible, by a course of well-directed questions, to elicit from any person knowledge of matters, which, in this life at least, he has never studied<sup>s</sup>. Our own souls may in like manner be compelled to surrender their hidden stores; by the charms of Dialectic we may bind the Proteus within us, and compel him to give true answers to our questioning. For thinking is but the converse of the soul with herself; she interrogates and she answers, she affirms and she denies<sup>t</sup>.

The Dialectic of Aristotle has a far lower station and office. It is merely the art of disputing by question and answer; of attacking and defending a given thesis from principles of mere probability, such as the opinions of men in general, or of the majority, or of certain eminent

οὐδὲ τοὺς ὀρίσμούς· οἱ δ' ἐχώρισαν, καὶ τὰ τοιαῦτα τῶν ὄντων ἰδέας προσηγή-  
ρευσαν.

<sup>r</sup> Meno, p. 81. Cf. Ritter, vol. ii. p. 273.

<sup>s</sup> Meno, p. 82.

<sup>t</sup> Theæt. p. 189. τοῦτο γὰρ μοι ἰνδάλλεται διανοουμένη, οὐκ ἄλλο τι ἢ  
διαλέγεσθαι, αὐτὴ ἐαυτὴν ἐρωτῶσα καὶ ἀποκρινομένη, καὶ φάσκουσα καὶ οὐ  
φάσκουσα.



authorities. This Art, as exhibited in the Topics, must not be confounded with the formal theory of reasoning developed in the Prior Analytics. The application of the syllogistic form might indeed give to the dialectic disputation a greater degree of method and precision. But Aristotle likewise gave to his Dialectic a decidedly material character, by means of the collection of *τόποι*, or general principles of probability, from which the premises of the disputants were to be drawn. The discussion was carried on by one party undertaking to defend, the other to attack a given thesis. Each asked his opponent to grant certain premises, which ought *prima facie* to be sufficiently probable to gain the assent of the other. These being granted, he endeavoured to deduce from them his own conclusion, or to involve his antagonist in contradictions resulting from such concession.

The logical and the dialectical syllogisms of Aristotle will therefore denote the same class of reasonings, but in slightly different points of view; the former representing them as derived from mere general grounds of probability; the latter, as fitted, as all such reasonings must be, rather for the disputations of the dialectician, than for the demonstrations of science.

If then we were to employ the word Logic solely in conformity with the use of its cognate terms by Aristotle, it would be material and not formal, an Art and not a Science. But, in that case, far from being coextensive with the subject of the Organon as a whole, it would correspond only to the two last treatises, the Topics and Sophistic Refutations, and would have considerably more affinity to the Rhetoric than to the Analytics.

A division of Philosophy into Logic, Physics, and Ethics, has been attributed, on the authority of Cicero<sup>a</sup>,

<sup>a</sup> Quæst. Acad. i. 5. Cf. De Fin. i. 7. Euseb. Præp. Evan. xi. 1. Augustin. De Civ. Dei, viii. 4.

to Plato. But the *name* Logic nowhere occurs in the Platonic writings; and if his Dialectic be intended, Metaphysics would, now at least, better express the character of the division. Aristotle has sometimes, on the strength of a passage in the Topics, been considered as adopting the same classification<sup>x</sup>. A more groundless conjecture has seldom been hazarded. The single passage adduced in its support occurs in a work treating of dialectic disputation, and of propositions viewed with reference to that purpose. The theory based on it is opposed to the interpretation of the oldest commentator<sup>y</sup>, and is inconsistent, not only with Aristotle's own constant use of the word *λογικός*, but with his well-known division of theoretical Philosophy into Physics, Mathematics, and Theology<sup>z</sup>. The reader who is acquainted with Ritter's account of Aristotle's Philosophy, will be able to appreciate the amount of error and confusion produced by ascribing the above-mentioned classification to Aristotle, and merging, as a necessary consequence, the Logic of the Stagirite in his Metaphysics. Even Plato's sanction of it may be questioned<sup>a</sup>.

If from the subject of the Organon of Aristotle we turn to the work itself, we have no greater evidence of unity. The name by which the collected treatises are generally known is long posterior to Aristotle<sup>b</sup>. In the citations

<sup>x</sup> Top. i. 14. 4.

<sup>y</sup> Alexander, Scholia, p. 261, a. 3 sqq. Cf. Waitz, Org. vol. ii. p. 450.

<sup>z</sup> Metaph. v. 1. 5. *πᾶσα διάνοια ἢ πρακτικὴ ἢ ποιητικὴ ἢ θεωρητικὴ*, κ. τ. λ. §. 10. *ὥστε τρεῖς ἀν εἶεν φιλοσοφίαι θεωρητικαί, μαθηματικὴ, φυσικὴ, θεολογικὴ*.

<sup>a</sup> See below, note e.

<sup>b</sup> The title has been attributed, vaguely enough, to the Peripatetics. These are known to have maintained, in opposition to the Stoics, that Logic was an instrument, not a part of Philosophy; and the logical writings of Aristotle are called *ὄργανικά* by the Greek commentators of the fifth and sixth centuries. The book itself, according to M. St. Hilaire, was not

of the author himself, if these can be trusted, each treatise is quoted as a separate work, and by its distinctive name<sup>c</sup>. The collection of the whole into one volume is probably not of earlier date than the time of Andronicus of Rhodes; and even after that time, the commentators differed in opinion as to the genuineness and order of the several parts<sup>d</sup>. Both external and internal evidence lead to the same conclusion, that Aristotle did not compose the *Organon* as a whole, or recognise one Art or Science of Logic as the subject of it.

The Greek commentators upon Aristotle are our earliest extant authority for the use of the word Logic in its modern sense. Alexander of Aphrodisias, the oldest of those whose works have come down to us, speaks of ἡ λογικὴ καὶ συλλογιστικὴ πραγματεία as containing under it ἀποδεικτικὴ, διαλεκτικὴ, πειραστικὴ, and σοφιστικὴ<sup>e</sup>. Here, while Dialectic retains its Aristotelian signification, Logic is extended so as to include the syllogistic theory in general, and its particular applications to necessary and probable matter. A similar

habitually called *Organon* before the fifteenth century. *Mémoire*, vol. i. p. 19. The words of an anonymous commentator are cited by Waitz, vol. ii. p. 294. λέγεται δὲ ἡ ἀποδεικτικὴ ἐπιστήμη ὄργανον, ἐξ ἧς καὶ τὸ ὄλον βιβλίον ὄργανον ἐκλήθη.

<sup>c</sup> No quotations of the *Categ. De Int. or Soph. Elench.* can be found in extant writings of Aristotle. The allusions to the first and last given by Ritter, (vol. iii. p. 28.) are doubtful. As regards the *Analytics* and *Topics*, the citations are reciprocal, and, if genuine, imply a revised edition of one or the other. M. St. Hilaire lays too much stress on the assertion of Galen, as to the origin of the titles of the *Prior* and *Posterior Analytics*. He leaves us in this dilemma. Either all the references to the above works are interpolated after the time of Galen, or the transcribers have, in every instance, changed the titles. Cf. St. Hilaire, *Mémoire*, vol. i. p. 42. with Waitz, vol. i. p. 367. In some instances, the reference is necessary to complete the sense, e. g. *Eth. Nic.* vi. 3.

<sup>d</sup> St. Hilaire, vol. i. p. 53. 113. 131. vol. ii. p. 141.

<sup>e</sup> Schol. p. 141. a. 19. The testimony of Boethius (in *Top. Cic.* p. 766.) would incline us to regard this usage of the word as derived from the earlier Peripatetics, though we must reject his reference to Aristotle. The

extension of Dialectic is found in the commentaries of David the Armenian<sup>f</sup>; and Philoponus uses both terms as synonymous, and in the same extent<sup>g</sup>.

From the above remarks it will follow, that in the often-disputed question concerning the nature of Logic, the authority of Aristotle is of no avail on one side or the other; since he did not compose the *Organon* as one work, or regard it as treating of one subject. The Dialectic of Aristotle is certainly an *Art*; his Analytic, both implicitly from his mode of treatment, and explicitly from his own confession<sup>h</sup>, must be regarded as a *Science*. But the question, *Suntne mel et fel dulcia*, is not less susceptible of a single aye or no, than the inquiry, whether the whole *Organon* of Aristotle treats of an Art or a Science.

Sir W. Hamilton regards the whole question between Art and Science as merely verbal<sup>i</sup>: and it certainly is so thus far, that the advocates of one or the other in theory have seldom suffered it to make any difference in their practice. But this only proves their own inconsistency. It is true that if we start from the *Organon* of Aristotle as a whole, and presume the substance of Logic to be already settled, the question whether it shall be called

Stoics too are known to have adopted the threefold division of Philosophy into Logic, Physics, and Ethics; indeed the language of Laetius, *οὕτω δὲ πρῶτος διείλε Ζήνων*, seems to imply that they, and not Plato, were the original authors of it. Cf. Laert. vii. 39. Plut. de Plac. Phil. i. 1. But as regards the nature and extent of the Stoical Logic or Dialectic, (for with them the terms were synonymous,) there is considerable uncertainty. See St. Hilaire, vol. ii. p. 135.

<sup>f</sup> Schol. p. 18. a. 34. Waitz, vol. ii. p. 437.

<sup>g</sup> Schol. p. 143. a. 4.

<sup>h</sup> Rhet. 1. 4. 5. ἡ ῥητορικὴ σύγκειται μὲν ἐκ τε τῆς ἀναλυτικῆς ἐπιστήμης καὶ τῆς περὶ τὰ ἥθη πολιτικῆς.

<sup>i</sup> Edinburgh Review, No. 115. p. 204. On the contrary side, some able remarks will be found in the Preface to St. Hilaire's Translation of the *Organon*, p. 12.

by this or that name is comparatively unimportant; but it is not so when, commencing with a clear conception of the one or the other, we endeavour to develop the whole subject in conformity to the leading notion. In proportion as we regard Logic as a means of operation rather than as an inquiry into truth, in the same proportion are we in danger of overloading our system with foreign embellishments, and sacrificing its scientific unity to a spurious Utilitarianism<sup>k</sup>. That the Sciences are capable of practical applications, no one pretends to deny; but because Astronomy is serviceable in Navigation, and Chemistry in Agriculture, is the exponent of the Science warranted in making these accidental circumstances the leading features of his exposition? The past history of Logic furnishes ample evidence of the effects of such a treatment. To this cause it is principally owing, that its professors have been so often charged with promising what they cannot perform, or what can be as well performed without them; that they have been taunted with examples of Reasoners who are no Logicians, and Logicians who are no Reasoners. To this may be mainly attributed the misapprehension that to this day exists as to the character and relative merits of the writings of Aristotle and Bacon. By this Logicians have principally been influenced, when they have dressed up their system in a motley of the borrowed plumes of other branches of knowledge, to entrap unwary readers, and increase, forsooth, the general usefulness of their doctrine<sup>l</sup>.

<sup>k</sup> On this subject I cannot resist quoting the excellent remark of M. St. Hilaire. "Sans la logique, l'esprit de l'homme peut admirablement agir, admirablement raisonner; mais sans elle, il ne se connaît pas tout entier: il ignore l'une de ses parties les plus belles et les plus fécondes. La logique la lui fait connaître. Voilà son utilité: elle ne peut pas en avoir d'autre." Préface, p. 42.

<sup>l</sup> See the candid confession of the Port Royal Logicians. "Au lieu que

It is not intended to deny the usefulness of Logic; but it may safely be asserted that its more valuable fruits are to be found in the training which the mind unconsciously receives, than in the conscious employment of knowledge in the formation and examination of reasonings, and that both, in respect of the true character of the Science, are secondary and accidental results, not primary and essential features.

But granting Logic to be a Science, an opinion to which internal considerations, as well as the weight of authority, incline us<sup>m</sup>, what is the object of its investigation? On this subject some discrepancy may be found among those agreed as to the Genus. Among the Schoolmen, for example, who generally adopted the scientific view, Albertus Magnus maintained Logic to be the Science of Argumentation, a decision for which he claims the support of the Arabian Philosophers, Alfarabi, Avicenna, and Algazel<sup>n</sup>. According to this view, Reasoning, the third of the mental operations, is the principal object of Logical investigation, the other operations secondarily, and so far as they are subservient to this. Aquinas adopted a modification of this opinion, and maintained the object of Logic to be the three operations of the mind, so far at least as they are dirigible by laws<sup>o</sup>; while Scotus combats both these positions, and asserts that the primary and proper object of Logic is the Syllogism<sup>p</sup>.

c'est justement cet amas de différentes choses qui a donné quelque cours à celle ci, et qui la fait lire avec un peu moins de chagrin qu'on ne fait les autres." Second Discours. In the same spirit Dugald Stewart praises Ramus for his attacks upon Aristotle's *abedarian* demonstrations of the syllogistic rules: with which may be profitably compared Sir W. Hamilton's note, Reid's Works, p. 698.

<sup>m</sup> For the different authorities on either side, see Sir W. Hamilton in Ed. Rev. No. 115. p. 203.

<sup>n</sup> Albert de Prædicab. Tract I. cap. 4.

<sup>o</sup> Aquinas in Periherm. c. 1. Cf. Smigleci Log. vol. i. p. 100.

<sup>p</sup> Scotus super Univ. Qu. 3. He enumerates in all six different opinions

The second of these opinions does not materially differ from that definition of Logic which is proposed by Kant, and sanctioned by Sir W. Hamilton, "The Science of the necessary Laws of Thought"; a definition which vindicates to Logic its peculiar province as a branch of mental science, and furnishes the leading conception by which we may hope one day to see it purified of the incumbrances with which it has so long been overlaid, and from which it has not yet been entirely emancipated.

The adoption of this definition necessitates a few remarks on a very different notion of Logic which has been put forth in works extensively studied in this University.

Both Aldrich and Archbishop Whately regard Language as the principal object of Logic. The former speaks of words as "*vicaria signa, quorum usum idoneum docendo, Logica mentem una ad bene operandum instruit.*" The latter goes further, and declares Logic to be entirely conversant about language; adding, "if any process of reasoning can take place in the mind, without any employment of language, orally or mentally, (a metaphysical question which I shall not here discuss) such a process does not come within the province of the science here treated of." On the contrary, we may maintain that the decision of the metaphysical question in the negative is indispensably necessary, before the

on the object of Logic. 1. *Conceptus formatus ab actu rationis.* 2. *Secundæ intentiones applicatæ primis.* 3. *Ens.* 4. *Oratio.* 5. *Argumentatio.* 6. *Syllogismus.* The three first as interpreted may be reduced to one, which is substantially that of Aquinas.

¶ In Kant's own words, "of the necessary Laws of the Understanding and the Reason." The inferences of Opposition and Conversion are regarded by him as Syllogisms of the Understanding, (*Verstandesschlüsse*), the ordinary syllogisms, as Syllogisms of the Reason. (*Vernunftschlüsse*.) The distinction (to say nothing of Kant's various employment of the term Reason) is psychologically questionable, and at all events would be out of place here, in commenting on a writer who adopts the ordinary division of the discursive faculties.

Archbishop's position can be considered in any sense tenable. If any process of reasoning can be carried on in the mind without the employment of language, assuredly the laws of such process are, equally with any other, matters of Logical investigation. If such process is not possible, we may then allow that Logic, *primarily* concerned with the laws of Thought, is *secondarily* but *necessarily* conversant about language as the instrument of Thought<sup>†</sup>. On the metaphysical question, however, the opinions of Philosophers are somewhat undecided. Though the extreme theory of Condillac as to the absolute necessity of language is generally abandoned, it is by no means easy to decide how far it may be dispensed with. The words of Aristotle, which have been quoted in opposition to the Archbishop's view, are not decisive; as he is only contrasting oral with mental reasoning, without determining what may be necessary for the carrying on of the latter<sup>‡</sup>. Locke distinguishes between "Mental Propositions, wherein the ideas, in our understandings, are without the use of words, put together or separated by the mind, perceiving or judging of their agreement or disagreement," and "Verbal Propositions, which are words, the signs of our ideas put together or separated in affirmative or negative sentences." But at the same time, with regard to the most important class of Logical Propositions, Universals, he allows that they "can never well be made known, and are very seldom apprehended, but as conceived and expressed in words<sup>§</sup>." In the well-

<sup>†</sup> Thus Sanderson, with reference however to oral, not to mental, language. "Objectum Logicæ *primario* est, *Mens* humana; unde et Logicæ nomen, velut ἀπὸ τοῦ λόγου, id est, ratione: *secundario* etiam et *Oratio*, quæ et ipsa λόγος dicta est, qua sc. sensa mentis nostræ loquendo exprimimus."

<sup>‡</sup> Anal. Post. i. 10. 6. Οὐ γὰρ πρὸς τὸν ἔξω λόγον ἡ ἀπόδειξις, ἀλλὰ πρὸς τὸν ἐν τῇ ψυχῇ, ἐπεὶ οὐδὲ συλλογισμός.

<sup>§</sup> Essay, b. iv. 5. 5. and 6. 2.



known distinction of Leibnitz, between intuitive and symbolical knowledge, the province of the latter is declared with some hesitation. "Et certe cum notio *valde composita* est, non possumus omnes ingredientes eam notiones simul cogitare: ubi tamen hoc licet, vel saltem in quantum licet, cognitionem voco intuitivam. Notionis distinctæ primitivæ non alia datur cognitio, quam intuitiva, ut *compositarum plerumque* cogitatio non nisi symbolica est." Practically, then, on account of the necessities of universal propositions and complex notions, Logic is compelled to make use of symbols. Whether the symbols of thought need necessarily be the same as those of speech<sup>2</sup>; and whether, if deprived of the latter, we could invent other symbols, or even dispense with any; and whether the domain of thought would thereby be narrowed or enlarged, its operations facilitated or retarded;—these and similar questions would be out of place here, and in any place are rather curious than useful. As a matter of fact, men do reason by means of language. We are morally certain that they will continue to do so, as long as that instrument remains. Further speculation leads to little more than the not very edifying conclusion, that man would certainly be constituted as he is not,—if he were not constituted as he is.

<sup>2</sup> Meditationes de Cognitione Veritate et Ideis, Opera, p. 80. ed. Erdmann. The Port Royal Logicians, on the other hand, maintain that language is only necessary for communication.

<sup>3</sup> The case of the deaf and dumb does not, as has sometimes been supposed, furnish any argument for the negative side. The absence of sound produces, as far as we know, a corresponding change in the symbols both of thought and communication; but this furnishes no new data for determining their relation to each other.

# ARTIS LOGICÆ

## RUDIMENTA.

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### CAP. I.

#### *De Terminis Simplicibus.*

§. 1. MENTIS operationes in universum tres sunt. 1. *Simplex Apprehensio.* 2. *Judicium.* 3. *Discursus*\*.

\* “Sicut dicit Philosophus in tertio de Anima, duplex est operatio intellectus. Una quidem, quæ dicitur indivisibilium intelligentia, per quam scilicet apprehendit essentiam uniuscujusque rei in se ipsa. Alia est operatio intellectus, scilicet componentis et dividensis. Additur autem et tertia operatio, scilicet ratiocinandi, secundum quod ratio procedit a notis ad inquisitionem ignotorum. Harum autem operationum prima ordinatur ad secundam: quia non potest esse compositio et divisio, nisi simplicium apprehensorum. Secunda vero ordinatur ad tertiam: quia videlicet oportet quod ex aliquo vero cognito, cui intellectus assentiat, procedatur ad certitudinem accipiendam de aliquibus ignotis. Cum autem Logica dicatur rationalis scientia, necesse est quod ejus consideratio versetur circa ea, quæ pertinent ad tres prædictas operationes rationis.” Aquinas in Periherm. Lect. 1. Cf. Opusc. xlviii. Tract. de Syll. cap. 1. The passage alluded to by Aquinas is De An. iii. 6. 1. ἡ μὲν οὖν τῶν ἀδιαρέτων νόησις ἐν τοῖς περὶ ἀοὺκ ἔστι τὸ ψεῦδος ἐν

1. *Simplex Apprehensio*, est nudus rei conceptus intellectivus, similis quodammodo perceptioni sensitivæ<sup>b</sup>; sicut enim *Imago* rei est in oculo, ita *Idea* in animo<sup>c</sup>: estque *Incomplexa* vel *Complexa*.

*Apprehensio simplex Incomplexa*, est unius objecti, ut *calami*, vel etiam plurium, confuse; ut *calami*, *manus*, &c. *Complexa*, plurium, sed cum ordine quodam et respectu; ut *calami in manu*<sup>d</sup>.

οἷς δὲ τὸ ψεῦδος καὶ τὸ ἀληθές, σύνθεσις τις ἤδη νοημάτων ὥσπερ ἐν ὄντων. Ἀδιαίρετα are either ἀριθμῶ or εἶδει. Metaph. ix. 1. 4. The latter only are νοητά, the former αἰσθητά. Cf. Anal. Post. i. 24. 11. Simple Apprehension will therefore be synonymous with Conception, in the proper sense of the term; see below.

<sup>b</sup> Since the time of Reid, *Perception* has usually been distinguished from *Sensation*; the former term being used to denote the knowledge which we have through the senses of external objects, the latter for the affection of the mind produced through the same medium. I have a *sensation* of whiteness, a *perception* of snow. Among earlier writers, the terms are used with more latitude. From both must be distinguished *Imagination* (φαντασία), which is properly the formation by the mind of images representing *individual* objects, which are not at the time acting on the sense. From this again must be distinguished *Conception*, which is of *universal* notions, and, *practically*, if not *necessarily*, through the medium of language, or at least of symbols. See Introduction. Cf. Reid's Works, ed. Hamilton, pp. 182, 360, 376.

<sup>c</sup> *Idea*. In the later and post-Cartesian sense of the word; in which sense, it is defined by Locke, "whatsoever is the object of the understanding, when a man thinks." For the history of this word, see Sir W. Hamilton, Ed. Rev. No. 99. p. 182.

<sup>d</sup> *Confuse*. This *confused* apprehension of many objects, is in truth only a succession of single apprehensions: thus in the example, we have two apprehensions, first of *calami*, and then of *manus*. Aldrich's distinction depends merely on an acci-

2. *Judicium*, est quo mens non solum percipit duo objecta, sed, quasi pro tribunali sedens, expresse apud se pronuntiat, illa inter se convenire aut dissidere°.

Est enim *Judicium* aliud *Affirmativum*, quod Arist. de Int. i. 3. vocatur etiam *Compositio*<sup>†</sup>; aliud *Negativum*, quod et *Divisio*.

Porro, tam particula *Est*, quæ affirmando convenientiam exprimit, quam *Non-Est*, quæ negando Dissidium, appellatur *Copula*; (sicut et Grammatica *Conjunctiones Disjunctivas* habet;) atque hanc sub determinatione cognoscendo differt *Judicium* ab *Apprehensione* complexa.

E. g. Si quis dixerit *Triangulum æquilaterum*

dent of language; “*calami in manu*” might easily be expressed by a single word, were it worth while to invent one. Complex Apprehension should properly be applied only to the apprehension of the proposition, (the *oratio perfecta*,—Aquinas, Opusc. xlviii. de Int. c. 3.) as distinguished from that of a term or an imperfect sentence.

\* *Κατάφασις ἐστὶν ἀπόφανσις τινος κατὰ τινος. Ἀπόφασις—ἀπόφανσις τινος ἀπὸ τινος.* De Int. 6. 1. In accordance with this, we may define Judgment with Reid, “an act of the mind, whereby one thing is affirmed or denied of another.” *Thing* is vague enough; but it is not easy to comprehend the various kinds of Judgment under any more precise expression. Aldrich’s definition is far too narrow. The terms of a judgment are not always objects of perception, and the very notions of agreement and disagreement are the consequences of Judgment, not the conditions of its possibility. In fact, Judgment is as necessary to Apprehension as Apprehension to Judgment. On the import of Propositions, some able remarks will be found in Mill’s Logic, b. i. chap. 5.

† *Compositio—σύνθεσις. Divisio—διαίρεσις.* See de Int. i. 3.

*esse æquiangulum*, possum Apprehensione Simplici incomplexa intelligere quid sibi velint singula Orationis hujus vocabula, complexa vero quid tota sibi velit Oratio: Quin et ipsius Naturæ lumine intelligo, Duo quælibet objecta vel inter se convenire, vel non convenire, et proinde altera Copularum esse jungenda: Nondum tamen feci iudicium donec Copulam determinaverim, i. e. apud meipsum statuerim hæc Duo Objecta, *Triangulum æquilaterum*, et *Triangulum æquiangulum*, hac Copula *Est*, non autem altera *Non-Est*, oportere conjungi.

3. *Discursus*<sup>§</sup>, est motus sive progressus mentis

§ “Additur tertia operatio quæ est discursus, ab uno composito vel diviso ad aliud: hoc tamen fit per argumentationem. Est autem argumentatio oratio significativa discursus rationis ab uno cognito ad aliud incognitum, vel a magis cognito ad minus cognitum. Sunt autem argumentationis quatuor species, scilicet syllogismus, enthymema, inductio, et exemplum.” Aquinas, Opusc. xlviii. Tract de Syll. cap. 1. The definition is too wide, being applicable to the immediate inferences of Opposition and Conversion, as well as to the mediate by Argumentation. In all there is a progress from one judgment to another. *Discursus* is more properly the progress from two connected judgments, to a third resulting from their connection. Cf. Port Royal Logic, Introd. “On appelle *raisonner* l'action de notre esprit, par laquelle il forme un jugement de plusieurs autres.”

Of this division of the operations of the mind, Sir W. Hamilton has observed, that “it never was proposed as a *psychological* distribution of the cognitive faculties *in general*: but only as a *logical* distribution of that section of them which we denominate *discursive*, as those alone which are proximately concerned in the process of reasoning.” Reid's

ab uno Judicio ad aliud; quod et Ratiocinium dicitur; et significatur Copula Illativa, qualis est *Ergo* aut alia similis. v. g. *Qui est extra fortunæ potestatem est beatus. Sapiens est extra fortunæ potestatem.* Ergo, *Sapiens est beatus.*

Singulis operationibus sui accidunt defectus. Apprehensioni, *Indistinctio*<sup>h</sup>; Judicio, *Falsitas*<sup>i</sup>;

Works, p. 242, 692. Hence Aristotle's division, which is *psychological*, will not exactly correspond. The nearest approach to Simple Apprehension is ἡ τῶν ἀδιαίρετων νοήσις; but νοήσις is variously used, and in its widest sense will embrace all the logical operations, and even φαντασία, which belongs rather to the perceptive soul. See de An. iii. 3. 8. Judgment will correspond nearly to the ἐπολήψις of de An. iii. 3. 7. (Cf. Trendelenburg de An. p. 469.) The latter term however is inapplicable to the cognition of axiomatic truths. Discursus answers to διάνοια and λογισμός, the former term being applied both to the faculty and its operation. But there is much uncertainty in the use of all the above terms. Cf. Biese, vol. i. p. 89, 327. Hamilton's Reid, p. 768.

<sup>h</sup> Indistinctness of Apprehension may be remedied by Definition, (and by Division as subordinate to it;) as we are thereby enabled to ascertain the exact contents of a notion, and to distinguish it from those with which it is most likely to be confounded. Logic however does not furnish us with definitions, but only tells us under what conditions the process is possible, and gives rules for performing it. Neither can Logic tell us whether any given Definition is *correct*; the correctness of a definition being however a different thing from its *distinctness*: cf. Smigleci Log. disp. ii. Qu. 1. disp. iii. Qu. 5. See further, Appendix, note B.

<sup>i</sup> Falsity of Judgment may be remedied by Logic, so far as the judgment is a *derived* one (ἐπολήψις), gained by the Reason (διάνοια), either by *immediate* inference, as in opposition and conversion, or *mediate*, as in induction and syllogism. Logic can give no rules for testing the truth of *independent* judg-

Discursui, *Mendosa Collectio*<sup>k</sup>. Quæ cum Sapientes animadverterent, et opportuna illis remedia excogitâssent, præcepta sua in unum compegère; eorumque Scientiam dixere *Logicam*, sive *Artem Rationis*<sup>l</sup>.

Est igitur *Logica*, Ars instrumentalis dirigens mentem<sup>m</sup> in cognitione rerum: ejusque partes tres sunt, pro operationibus mentis quas dirigit. 1. *De Simplici Apprehensione*. 2. *De Judicio*. 3. *De Discursu*.

ments, whether gained by perception of the sense (*αἰσθησις*), or by intuition of the intellect (*νοῦς*). Neither can it tell us whether any given judgment *per se* is true or false, but only gives rules for testing its truth as implied in that of other judgments. The reader may compare Kant's distinction between material and formal or logical truth, which in principle corresponds to the above, though his nomenclature has in many respects been departed from. See *Logik*, *Einführung*, VII.

<sup>k</sup> *Mendosa collectio* is remedied by the rules of syllogism and induction; and here Logic not only enables us to perform the operation rightly, but also to test the correctness of any given argumentation. This then is remedied perfectly by Logic, the others partially only.

<sup>l</sup> *Artem rationis*.—More correctly, “the science of the laws of the three operations of the Reason.”

<sup>m</sup> *Dirigens mentem*.—Directing the reason by rules, in the performance of its several operations. Cf. *Port Royal Logic*, *Introd.* “La logique est l'art de bien conduire sa raison dans la connoissance des choses.” Sanderson's definition, “in cognitionem omnium intelligibilium,” is not, as is sometimes supposed, at issue with this; *intelligibilia* not being synonymous with *res*. But for various definitions of Logic, as also for the question of Art or Science, see *Introduction*.

§. 2. QUONIAM vero, inter docendum et disputandum, neque res aliqua, neque conceptus, cui subjacet, commode in medium afferri potest; necesse est vicaria utriusque signa substituere, quorum usum idoneum docendo, Logica mentem una ad bene operandum instruit.

Hujusmodi signa apud homines recepta, sunt *Voces*: Nam *Vox* est signum rei vel conceptus<sup>a</sup> ex instituto vicarium<sup>o</sup>: et in significando, primo <sup>De Int. 1.2.</sup> quidem *declarat* conceptum, deinde *supponit* pro re<sup>p</sup>. Dico autem *ex instituto*, quia soni inarticu-

<sup>a</sup> Primarily of the conception, secondarily of the thing. Cf. de Int. i. 2. Καὶ ὥσπερ οὐδὲ γράμματα πᾶσι τὰ αὐτά, οὐδὲ φωναὶ αἱ αὐταί: ὧν μέντοι ταῦτα σημεῖα πρῶτως ταῦτὰ πᾶσι παθήματα τῆς ψυχῆς, καὶ ὧν ταῦτα ὁμοιώματα, πράγματα ἤδη ταῦτά. On the distinction between σημεῖον and ὁμοίωμα, see Waitz. vol. i. p. 324.

<sup>o</sup> What Aldrich calls simply *Vox*, is called by Aristotle φωνῇ σημαντικῇ, and by Boethius and Petrus Hispanus, *Vox significativa ad placitum*. In the latter case, *Vox* is extended to the grammatical word; in the former, it is limited to what may be called the *Vox Logica*. Logic differs from Grammar, in considering language simply as the *interpretation of thought*, (the ἐρμηνεία of Aristotle,) not as in any way expressive of the passions or the will. Logic therefore solely regards words as the signs of an operation of the reason, and hence its simplest words are the noun and the verb, which alone are *per se* signs of conceptions. Syncategorems, being not significative but consignificative, are excluded from Logic, but recognised by Grammar. So Aristotle, in the *De Interpretatione*, treats only of the noun and the verb. In the *Poetics*, ch. 20. he adds the φωνὰὶ ἄσημοι, the conjunction and the article. Cf. Harris, *Hermes*, ch. iii.

<sup>p</sup> *Supponit pro re*. The *supposition* (as it was called) of a term being posterior to its *signification*. The doctrine of the supposition of terms, which is not found in Aristotle, is one



lati, vocesque quas Natura sponte suggerit, extra artem censentur.

Jam, quæ simplicem Apprehensionem exprimit, *Vox simplex* est; quæ Judicium, *Complexa*<sup>1</sup>; quæ

of the subtleties of the *parva logicalia*, derived by the Schoolmen, through Petrus Hispanus, from the Greek Logic of Michael Psellus. *Suppositio* was defined to be "Acceptio termini substantivi pro aliquo;" thus the term *homo*, naturally applicable to men of all generations, is in the proposition *homo currit*, accidentally limited to existing individuals. In this case it was said, in not very classical Latin, "*homo supponit pro præsentibus*." In the same sense, Psellus employs *ὑποτίθῃσι*. For further information on the various kinds of supposition, the curious reader may examine Sanderson's Logic, b. ii. ch. 2.

<sup>1</sup> *Vox complexa* (φωνή συμπεπλεγμένη) in Aristotle signifies a compound word; his example is *ἐπακτροκέλης*, of which each part has a meaning in composition. *Vox simplex* (ἀπλή) where the parts have no meaning. The later meaning of *vox complexa* properly corresponds to Aristotle's λόγος (Oratio), and is not limited, as by Aldrich, to the *Proposition* (oratio enunciativa). Thus Petrus Hispanus: "Vocum significativarum ad placitum alia complexa, ut *oratio*, alia incomplexa, ut nomen et verbum. Orationum perfectarum alia indicativa, ut *homo currit*; alia imperativa, ut *Petre fac ignem*; alia optativa, ut *utinam esset bonus clericus*; alia subjunctiva, ut *si veneris ad me dabo tibi equum*; alia deprecativa, ut *miserere mei Deus*. Harum autem orationum, sola indicativa oratio dicitur esse propositio." Sum. Log. Tract. 1. Cf. Boeth. de Syll. Cat. p. 582. With regard to the *vox decomplexa*; as λόγος is defined by Aristotle as a species of φωνή, and syllogism as a species of λόγος, the latter may without error be called vox. But the distinction is unnecessary; the syllogism, as far as apprehension is concerned, being only three several propositions. The connexion between them is not a matter of apprehension, but of reasoning.

Discursum, *Decomplexa*. Nam argumentum omne resolvitur in tres *Propositiones*, sive sententias, et propositio omnis complectitur voces, non semper numero, sed sensu semper tres; 1. *Subjectum*, sive de quo aliud dicitur. 2. *Prædicatum*, sive id quod dicitur. 3. *Copulam*, quæ utrisque media intercedit<sup>r</sup>. Nam Subjectum et Prædicatum quoad sensum semper extrema sunt, et vocantur ideo *Termini Propositionis*.

Atque hinc adeo vulgo dicitur Pars prima Logicæ versari circa *Terminos simplices*, i. e. voces simplices, Apprehensionem simplicem exprimentes<sup>s</sup>: secunda circa *Propositionem*, sive Vocem com-

<sup>r</sup> The Latin Logicians distinguish between propositions *secundi adjacentis*, in which the copula and predicate form one word, e. g. "Homo currit," and propositions *tertii adjacentis*, in which they are separated, e. g. "Homo est animal." The distinction originates with Aristotle, see De Int. 10. 3. But Aristotle does not maintain that propositions of the former kind are to be resolved into the latter. On the contrary, the early part of the *De Interpretatione* is adapted exclusively to propositions *secundi adjacentis*; and in order to make it applicable to such propositions as "Homo est animal," we must consider the copula and predicate as equivalent to a single verb<sup>a</sup>.

<sup>s</sup> In Aldrich's limitation of the terms, *Vox simplex*, *Vox categorematica*, and *terminus simplex*, are synonymous: syncategorems not being voces (logicæ) at all. But in this usage he is not always consistent.

<sup>a</sup> In De Int. 2. 4. it seems at first sight as if λευκόν alone was a ῥήμα. That this is not the case is clear from Poetics, 20. 9. τὸ μὲν γὰρ ἄνθρωπος ἢ λευκὸν οὐ σημαίνει τὸ πότε, τὸ δὲ βαδίζει ἢ βεβάδικε προσσημαίνει τὸ μὲν τὸν παρόντα χρόνον τὸ δὲ τὸν παρεληλυθότα. In fact, λευκόν, by a common Greek Idiom, is equivalent to λευκόν ἐστι.

plexam, quæ Judicium exprimit: tertia vero circa *Syllogismum*, sive Vocem decomplexam, qua Argumentatio sive Discursus exprimitur.

De Int. ch.  
2. and 3.

§. 3. PRIMA igitur pars Logicæ versatur circa *Terminos Simples*<sup>†</sup>; i. e. ejusmodi voces, quæ solitariae in propositione prædicari vel subjici possunt; et vocantur ideo *Categorematicæ*, ut *homo*, *lapis*<sup>‡</sup>. Quædam etiam Vocabula sunt tantum *Syncategoremata*, sive compartes Subjecti aut Prædicati, ut *omnis*, *nullus*; Quædam etiam mixta<sup>‡</sup>, ut *semper*, i. e. omni tempore; *nemo*, i. e. nullus homo; *Currit*, i. e. est currens; quo etiam modo verbum omne Grammaticum resolvi potest.

*Verbum* igitur *Logicum* (nempe *purum*) præter

<sup>†</sup> Aristotle's *Simple terms*, (ἁπλοὶ, εἰς οὓς διαλύεται ἡ πρότασις,) or, as others call them, *categorematic words*, are the *noun* as subject, and the *verb* as predicate, "*homo currit*." The oblique cases of the noun and past or future tenses of the verb are not simple terms, being only πῶσαις ὀνόματος or ῥήματος. The noun and verb are the only two parts of speech recognised by Logic. See Boethius, *Introd. ad Syll.* p. 561. and Petr. Hisp. *Tract. I.*

<sup>‡</sup> The terms *categorematic* and *syncategorematic* are not Aristotelian, though the distinction is of course implied in his theory of the Proposition. The two terms occur in the synopsis of Michael Psellus, who calls the latter προσκατηγορήματα. He is followed by Petrus Hispanus, who uses the ordinary nomenclature: κατηγορήματα in Aristotle means a *predicable*, e. g. de Int. 11. 4. Cf. Trendelenburg, *Elementa*, §. 3. Waitz, vol. i. p. 267.

<sup>‡</sup> *Mixta*. This is clearly a cross division. Every mixed word must, of course, be *categorematic* or *syncategorematic*.

Copulam nullum est: cætera ex participio et copula coalescunt<sup>†</sup>.

*Nomen Logicum*, est Terminus simplex sine De Int. 2.1. tempore significativus<sup>‡</sup>. Nam ex antedictis, *Terminus simplex* idem valet atque Vox articulata et recta, et ex instituto significans: siquidem exclusæ sunt voces inarticulatæ, quasque natura sponte suggerit; voces autem obliquæ sunt Syncategoremata.

Multæ sunt Nominis Divisiones; quarum tres<sup>\*</sup> sufficiunt hujus loci instituto; sed ob multiplicem earum usum, quinque alias adjungam.

1. Nomen *singulare*, est quod rem unam et De Int. 7.1. solam significat, ut *Socrates*: *Commune*, quod plura, et eorum singula significare potest, ut *homo*.

<sup>†</sup> So far is the copula from being the only logical verb, that it is, properly speaking, no verb at all. It cannot correspond to the *ῥῆμα* of Aristotle, except by coalescing with the predicate. It only serves to connect an attribute with its subject. The copula must of course, not be confounded with the verb *est*, which predicates existence, as "Homo est." The whole question is ably treated by Pacius on de Int. ch. 3. Cf. Biese, Die Philosophie des Aristoteles, vol. i. p. 95.

<sup>‡</sup> *Nomen*.—Arist. de Int. 2. 1. *ὄνομα μὲν οὖν ἐστὶ φωνὴ σημαστική κατὰ συνθήκην ἄνευ χρόνου. Σine tempore*, as opposed to the verb, the other simple term, *τὸ προσσημαῖνον χρόνον*. "Currit," e. g. in addition to its principal notion of running, signifies as an adjunct the present time, (see Ammonius, Scholia, p. 105. b. 29.) This distinction is lost by those, who with Aldrich resolve the verb into copula and predicate.

<sup>\*</sup> *Tres*, i. e. the three employed in his definition of *predicabile*, viz. those into singular and common, univocal and equivocal, first and second intention.

[2. *Transcendens*, quod solis omnibusque veris Entibus convenit, ut *ens*, *res*, *aliquid*, *unum*, *verum*, *bonum*<sup>b</sup>. *Supertranscendens*, quod omnibus etiam fictis, ut *imaginabile*, *cogitabile*: *Non-transcendens*, omne aliud nomen.]

De Int. 2.3. 3. *Finitum*, est cui abest particula *non*: *Infinitum*<sup>c</sup>, cui præfigitur, ut *non homo*, i. e. omnia præter hominem: unde particula *non*, dicitur *infinitans*.

4. *Positivum*<sup>d</sup>, est quod significat rem quasi præsentem: *Privativum*, quod dicit absentiam rei a subjecto capaci: *Negativum*, quod ab incapaci. Sic *homo* est vox *positiva*; *videns* dicitur de homine *positive*; *cæcus* de homine *privative*; *cæcus*, seu potius *non videns*, de lapide *negative*.

Cat. 1. 1. 5. *Univocum*<sup>e</sup>, est cujus una significatio æque

<sup>b</sup> These are usually called the six transcendents, and are regarded as predicable of the several categories *analogously*, not *univocally*.

<sup>c</sup> *Infinitum*. So translated by Boethius. It should be *indefinitum*; see Hamilton on Reid, p. 685. The translation is censured by Vives, de Caus. Corr. Art. lib. 3.

<sup>d</sup> In these divisions there is much clumsiness and self-repetition. The distinction between positive and privative nouns is repeated below, under the four *opposita*. *Negative* nouns have no business here at all, being opposed, not to *positive*, but to *affirmative*, and belonging to another kind of opposition, the *contradictory*. *Relatives* also form another member of the same fourfold division; and *Repugnants* include all the four *opposita*, and other nouns to boot.

<sup>e</sup> *Univocum univocatum*—συνώνυμον: *æquivocum*, (æquivocatum)—ὁμώνυμον. Ὁμώνυμα λέγεται ὃν ὄνομα μόνον κοινόν, ὃ δὲ κατὰ τοῦνομα λόγος τῆς οὐσίας ἕτερος, οἷον ζῶον ὃ τε ἄνθρωπος καὶ τὸ

convenit multis, ut *homo*: *Æquivocum*, cujus diversæ, ut *Gallus*: *Analogum*, cujus una inæqualiter, ut *pes*. [Vox ipsa dicitur *Univocum Univocans*: res significata *Univocum Univocatum*, et sic de cæteris.]

6. *Absolutum*<sup>f</sup>, est cujus tota significatio spectat

γεγραμμένον. Συνώνυμα δὲ λέγεται ὧν τό τε ὄνομα κοινὸν καὶ ὁ κατὰ τοῦτομα λόγος τῆς οὐσίας ὁ αὐτός, οἷον ζῶον ὃ τε ἄνθρωπος καὶ ὁ βοῦς. (Cat. ch. 1.) Analogous nouns are but one out of many species of equivocal, belonging to the *æquivoca consilio*, (ἀπὸ διαβολῆς,) of the Greek interpreters; to which are opposed the *æquivoca casu*, (ἀπὸ τύχης.) See Scholia, p. 42, a. 37, 47. Boethius in Prædicamenta, lib. 1. p. 117. (Cf. Arist. Eth. Nic. i. 4. 12.) The συνώνυμα of Aristotle must be distinguished from the modern synonyms, which answer to the πολυνώνυμα of Speusippus, (Schol. p. 43, a. 31.) and the *multivoca* of Boethius, and are defined by the latter, “quorum plura nomina, una definitio est.” Συνώνυμα was used in this sense by the Stoics, and the same sense may also be found in Aristotle, Rhet. iii. 2. 7. and perhaps Top. viii. 13. 2.

<sup>f</sup> It is not easy to distinguish accurately the two divisions of terms into absolute and connotative, abstract and concrete, respectively. The following attempt is made with some doubt as to its success. In the second chapter of the Categories, Aristotle divides all ὄντα into four classes, Universal Substances, Singular Substances, Universal Attributes, and Singular Attributes. Substances of both kinds exist *per se*; attributes can only exist in substances. Hence the scholastic distinction between Subjects of Predication and Subjects of Inhesion. The universal substances are predicable of the singular, as genera and species of individuals. “Socrates is a man.” In this case the individual is a subject of *predication*. Attributes are not in their original state predicable of substances. Whiteness exists in snow; but we cannot say, “Snow is whiteness.” Here, then, the subject is not one of predication, but of *inhesion*. But, by an act of the mind, an attribute may be so connected with a subject as to

rem per se sumptam, [ut *Justitia* : *Connotativum*, quod eandem quasi alteri nexam, ut *Justus*.] *Concretum*, quod rem quasi sua natura liberam, sed jam implicitam subjecto, ut *Justus* : *Abstractum*, quod rem quasi sua natura nexam, sed jam subjecto exemptam, ut *Justitia*. [Denique, si *Concretum*

Cat. 1. 5.

become predicable of it as a differentia, property, or accident; e. g. "snow is white." Predicates thus formed from attributes are called *connotative*, being said to signify *primarily* the attribute, and to *connote* or *signify secondarily* the subject of inhesion. Hence a connotative term may be defined, "One which primarily signifies an attribute, secondarily a subject." Whereas the original universals, whether substances or attributes, as "man," or "whiteness," were called *absolute*. Again, by an act of the mind, the terms signifying substances may be conceived in the form of attributes, so as to be no longer predicable of the individuals; thus "homo" becomes "humanitas." All such terms, not predicable of singular substances, whether primarily attributes, as "whiteness," or secondarily conceived as attributes, as "humanity," are called *abstract* terms; all that are predicable of the individuals, whether primarily, as "homo," or secondarily, as "white," are *concrete*. Hence the two divisions are distinct in principle, though some of the members of each cross. For example : *Homo* is concrete and absolute, *albus* concrete and connotative, *albedo* abstract and absolute; but no abstract term is connotative.

The above account differs considerably from that given by Mr. Mill, *Logic*, b. i. chap. 2. His account is more valuable in a philosophical than in a historical point of view. Now that a juster view of the philosophy of language has abolished universal substances, Mr. Mill's extension of connotative terms, so as to include all concrete general names, may be regarded as an improvement on the scholastic distinctions; but it must not be confounded with them. The materials of the present note are chiefly from Occam, *Logic*, p. i. chap. 5, 10. It must be admitted, however, that there is some licence in the use of the word connotative.

sola terminatione diversum sit ab Abstracto, ut *justus a justitia*, hoc *Denominans* dicitur, illud *Denominativum*, Subjectum vero *Denominatum*<sup>a</sup>.

Denominativis accensentur aliquando *Derivativa* Cat. 8. 27. illa, quæ vel solam nominis Analogiam, vel solam rei vim, non utramque retinent, ut *Studiosus studii et virtutis*. Sed ista verius *Conjugata* sunt<sup>b</sup>.

Connotativum quoque dicitur de nominibus quorum conceptus se mutuo ingrediuntur, ut *Pater et Filius*: nam et illa opponuntur absolutis; sed vocantur proprio nomine *Relativa*.]

7. *Convenientia*, sunt quæ possunt de eodem simul dici, ut *doctus et pius*: *Repugnantia*, sive *Opposita*, quæ non possunt, ut *album et nigrum*<sup>i</sup>.

<sup>a</sup> Παρώνυμα δὲ λέγεται ὅσα ἀπὸ τινος διαφέροντα τῇ πτώσει τὴν κατὰ τοῦνομα προσηγορίαν ἔχει, οἷον ἀπὸ τῆς γραμματικῆς ὁ γραμματικὸς καὶ ἀπὸ τῆς ἀνδρείας ὁ ἀνδρεῖος. Cat. i. 5. The word παρώνυμα is translated by Boethius *denominativa*. It should have been *denominata*. From the same authority denominatives have been limited by the Schoolmen to concrete adjectives, predicable of a subject possessing the abstract attribute. Cf. Aquinas, Opusc. xlvi. Tract. 2. cap. 1. The limitation is not warranted by Aristotle, and is expressly rejected by his Greek Commentators. See Simplicius, Scholia, p. 43. b. 5. τῶν δὲ παρωνύμων ἂν εἴη, φησὶν ὁ Πορφύριος, καὶ τὰ πατρωνυμικά καὶ τὰ συγκριτικά καὶ τὰ ὑπερθετικά καὶ τὰ ὑποκοριστικά.

<sup>b</sup> *Studiosus* is used in Scholastic Latin as a translation of the Greek σπουδαῖος in the two senses of "diligent" and "virtuous." In the former, it is a denominative from *studium*. In the latter, not, as is observed by Aristotle, Cat. 8. 27. The name *conjugata* is more properly applied to derivatives from the same primitive, as *sapiens*, *sapienter*, *sapientia*; the σύστοιχα of Aristotle. Cf. Arist. Top. ii. 9, 1. Cic. Top. c. 3.

<sup>i</sup> *Repugnantia* should not be considered as synonymous



- Cat. 10. 1. [Oppositio<sup>k</sup> *incomplexa*, sive terminorum simplicium, est omnino quadruplex: 1. *Relativa*, inter terminos relativos, ut *Patrem et Filium*. 2. *Contraria*, inter *contrarios*, i. e. absolutos se mutuo pellentes ex subjecto alterutrius capaci, ut *album et nigrum*. 3. *Privativa*, inter privativum et positivum, ut *videntem et cæcum*. 4. *Contradictoria*, inter positivum et negativum, intellige finitum et infinitum, ut *hominem et non-hominem*. Hæc est oppositio maxima, quia nullum admittit medium;
- Cat. 10. 8. neque *Participationis*, quale est fuscum respectu *albi et nigri*; neque *Abnegationis*, quale est lapis inter *videntem et cæcum*. *Relativa* contra, omnium minima; nam *Relata* non sunt opposita, nisi ad idem sumantur.]

8. Nomen<sup>1</sup> *Primæ intentionis*, est Vox in com-

with *opposita*. There are many repugnants which are not included under any of Aristotle's four modes of opposition; e. g. *red* and *blue* are repugnant, but not opposed.

<sup>k</sup> Λέγεται δὲ ἴτερον ἐτέρῳ ἀντικείμεναι τετραχῶς, ἢ ὡς τὰ πρὸς τι, ἢ ὡς τὰ ἐναντία, ἢ ὡς στέρησις καὶ ἔξις, ἢ ὡς κατάφασις καὶ ἀπόφασις. Ἀντίκειται δὲ ἕκαστον τῶν τοιούτων ὡς τύπῳ εἰπεῖν ὡς μὲν τὰ πρὸς τι οἷον τὸ διπλάσιον τῷ ἡμίσει, ὡς δὲ τὰ ἐναντία, οἷον τὸ κακὸν τῷ ἀγαθῷ, ὡς δὲ τὰ κατὰ στέρησιν καὶ ἔξιν, οἷον τυφλότης καὶ ὄψις, ὡς δὲ κατάφασις καὶ ἀπόφασις, οἷον κάθηται-οὐ κάθηται. Cat. 10. 1. Contraries are the two most opposite qualities of the same class of subjects, e. g. *black* and *white*, as colours of bodies; *virtue* and *vice*, as habits of the soul. Cf. Cat. 11. 5.

<sup>1</sup> A *first intention* may be defined "a conception of a thing or things formed by the mind from materials existing without itself." A *second intention* is a conception of another conception or conceptions, formed by the mind from materials existing in itself. Thus the conceptions "man," "animal,"

muni usu posita. *Secundæ*, Vox artis, quam ex communi sermone sumptam Philosophia recudit denuo et moderatur.

§. 4. *Vox Singularis*, dicitur alio nomine *Indi-*

"whiteness," &c. are framed from marks presented by natural objects. The conceptions "genus," "species," "accident," "predicable," "universal," &c. are formed from the first intentions themselves viewed in certain relations to each other. Hence the former are predicable of the objects immediately; we may say, "*that* is a man," "*that* is white;" the latter are only predicable of words or notions, "*man* is a species." Hence when we are told that a predicable is *commune*, *univocum*, *secundæ intentionis*; it is not meant that all universals are *in themselves* second intentions; but that every predicate viewed *in relation to its subject* may be comprehended under one of Porphyry's five classes of predicables; all which are second intentions. So when Genus is said to be predicable of Species, it is not meant that we can predicate the one second intention of the other, so as to say, "Species is Genus;" but that the first intention "animal" is predicable of the first intention "man;" the relation of the one to the other being expressed by the second intentions "Genus" and "Species." For this reason Logic was said to treat of *second intentions applied to first*. See Aquinas, Opusc. lvi. Scotus, Sup. Univ. Qu. 3. Zabarella, De Natura Logicæ, lib. i. cap. 19.

The distinction between first and second intentions is generally considered as of Arabian origin. Scotus, however, (Sup. Univ. Qu. 3.) attributes it to Boethius, whose extant writings do not confirm the statement. It is found in Averroes, Epitome de Predicamentis ad fin. For scholastic expositions, see Aquinas, Opusc. xlviii. Tract. I. cap. 1. Scotus, in 1 Sent. Dist. 23. In Univ. Qu. 11. Occam, Logic. P. i. cap. 11. Aldrich's definition, which is extremely vague though not positively erroneous, was probably suggested by Crakanthorpe, who in his Proemium calls second intentions *Voces Artis Logicæ*. It is scarcely necessary to add, that the explanation of Abp. Whately is altogether erroneous.

*viduum*, ejusque significatum *Unum numero*: neque enim singulare est quicquid Unum dici potest; sed multa, quæ sunt invicem similia, eatenus Unum censentur. Vocantur enim uno eodemque nomine; quod ipsa Vocis definitio<sup>m</sup> non patitur, nisi in illis reipsa sit, vel saltem concipi possit, una aliqua eademque Natura, quæ huic nomini respondeat.

Talem reperit intellectus, dum plura contemplando *abstrahit*<sup>n</sup> ab eorum differentiis; i. e. spectat

<sup>m</sup> *Vocis definitio.* Since Vox is "signum rei vel conceptus," not rerum vel conceptuum.

<sup>n</sup> *Abstrahit.* Abstraction is, properly speaking, the separation of one portion of the attributes coexisting in any object from the rest. In this sense Geometrical Magnitudes are called by Aristotle τὰ ἐξ ἀφαιρέσεως, (An. Post. I. 18. 1.); because the Geometer considers only the properties of the figure, separating them from those of the material in which it is found. (See An. Post. I. 5. 6.) On similar grounds is formed the scholastic distinction of *abstract* and *concrete* terms; since in the former the attribute is considered apart from the subject in which it is perceived by the senses: e. g. sight presents to us only *alba*; the mind forms the conception *albedo*. And so Universals are gained by *Abstraction*, i. e. by separating the phenomena in which a given group of individuals resemble each other from those in which they differ. For this reason Locke calls all universals *abstract ideas*; a phrase etymologically allowable, but liable to be confounded with the scholastic use of the word abstract in a different sense. For this reason it is better to adhere to the term *universals*; which has at the same time the advantage of leaving the Logician, as such, uncommitted to any metaphysical hypothesis as to their nature; since the Realist may interpret Universal *Substances*, the Nominalist, *Universal Names*, the Conceptualist, *Universal Notions*.

The forming universal notions by virtue of the features thus separated is called by some modern writers *Generalization*,

in rebus ea tantum quæ conveniunt, neglectis omnibus quibus dissident; adeoque fundamentum omne discriminis, præter numerum, eximit. Quare naturam sic abstractam, cum sit omni singulorum differentiæ superstes, concipi par est, non ut in singulis diversam, sed ut in omnibus eandem; adeoque *Universale* quiddam sive *Ens unum in multis*: ejusque signum idoneum erit, Nomen commune, *Univocum*, *Secundæ intentionis*, uno verbo, *Prædicabile*, sive Vox apta prædicari, i. e. Univoce dici de multis.

§. 5. *PRÆDICABILIMUM*° capita, constitui et definiri possunt ad hunc modum. Quicquid in multis reperiri potest, vel est tota eorum essentia, vel ejus pars, vel cum essentia conjunctum<sup>p</sup>.

as distinguished from *Abstraction*, the mere act of *separation*; and it is maintained that, though we cannot generalize without abstracting, we may abstract without generalizing. The question is rather psychological than logical, and need not be discussed here. See Stewart, *Phil. of Human Mind*, part i. ch. 4. Whately's *Logic*, p. 52, 138. *Outline of Laws of Thought*, p. 44.

° The five Heads of Predicables are an addition to the Aristotelian Logic, taken from the *Isagoge* or Introduction to the Categories by Porphyry, written in the third century. Aristotle's doctrine, as far as it can be gathered from the Topics, differs from that of Porphyry in several points; as does the latter from the view adopted by Aldrich.

<sup>p</sup> *Quicquid in multis*, &c. These definitions are taken from Albertus Magnus, (*de Prædicab. Tract. II. cap. 1.*) and were generally adopted by the Realists, in the form of introduction to, or commentary on, the Definitions given by Porphyry.

- Quare Universalia vel (quod eodem redit) Prædicabilia sunt quinque, et non plura; videlicet, *Genus*, *Species*, *Differentia*, *Proprium*, *Accidens*<sup>1</sup>.

Porph.  
Isag. 3. 17.

Nam 1. *Genus*, est quod prædicatur de pluribus ut eorum essentia pars *materialis* sive communis; ut *animal*<sup>2</sup>. 2. *Differentia*, quæ ut

The Nominalists, on the other hand, expressly denied that any predicable was of the essence of the individual. See Occam, *Logica*, p. i. cap. 20, 21. To discuss the full bearings of this controversy would exceed the limits of a note. It will be sufficient to observe, that a considerable portion of the language adopted by Aldrich is not even intelligible, except on realistic principles; and that whenever the same language is adopted by a Nominalist, he is inevitably involved in inconsistencies and self-contradictions. The same is in some degree true of the original exposition of Porphyry, though the latter professes to leave the question of Nominalism and Realism open. For the present I shall content myself with stating so much of realistic views as may render Aldrich intelligible, reserving all else for the Appendix.

<sup>1</sup> By the Realists, Universals, or at least Genera and Species, were held to be Substances existing in the various individuals of which they were predicable. According to them there is an Universal *man*, existing as one and the same in Socrates and Plato, and all individuals of the Species. The various individuals are formed by the addition of accidents to the Species. The latter are limited in number, and unaffected by the distinction of the individuals, whose number is unlimited. The mind, therefore, by abstraction, does not create the Universals, but only becomes cognisant of what existed before. By the Nominalists, Universals were held to be notions existing only in the mind, and created by Abstraction. The various modifications of the two views need not be noticed here.

<sup>2</sup> "Genus speciebus *materia* est. Nam sicut æs, accepta forma, transit in statuum, ita genus, accepta differentia, transit

essentiæ *pars formalis* sive discretiva; ut *rationale*. <sup>Isag. 3. 1, 17, 20.</sup>  
 3. *Species*, quæ ut tota essentia; ut *homo*. 4. *Proprium*, quod ut essentiæ junctum necessario<sup>\*</sup>; ut *risibile*. 5. *Accidens*, quod ut essentiæ junctum contingenter; ut *album*, *nigrum*, *sedere*.

Patet hinc 1°. De iis dici *Prædicabile* quibus *inest Universale*. *Genusque* adeo, quod est pluri-  
 um essentiarum vel specierum pars communis, <sup>Isag. 2. 11. 6. 8.</sup>  
 de *specie differentibus*, h. e. de diversis speciebus  
 quas ingreditur, dici; ut *animal* de *homine* et *bruto*.  
*Speciem* vero, de *numero differentibus*, h. e. de  
 diversis individuis, quorum singula habent essen-  
 tiam speciei vocabulo significatam; sic *homo* de

in speciem." Boethius de divisione. This, as well as the  
*communis* and *discretiva*, may be understood *absolutely* or  
*relatively*. Porphyry recognises only a *relative* differentia  
 between two given species. Thus *rationale* is not the differentia  
 of man *per se*, but of man as distinguished from brutes.  
 Hence he defines man, ζῷον λογικὸν θνητόν; the last term being  
 in like manner the differentia of man, as compared with the  
 gods. In this he is supported by the *logical* writings of  
 Aristotle. The theory of a single differentia coextensive with its  
 subject, and distinguishing it from *all other species whatever*, is  
 perhaps implied in the *Metaphysics* (vi. 12.); though, as the  
 passage is usually interpreted, it is not easy to reconcile  
 Aristotle's theory with his practice. From this passage, how-  
 ever, as explained (rightly or wrongly) by the Arabians, the  
 doctrine passed to Albert and Aquinas, and became a canon  
 of the scholastic Logic. It cannot, however, be consistently  
 maintained by any but a Realist. See Appendix, note A.

\* *Necessario*, i. e. flowing from the essence as effect from  
 cause. *Contingenter*, not connected with the essence by any  
 law of causation, though, as a matter of fact, it *may* be found  
 in all the individuals of the species. Hence the distinction  
 of inseparable and separable accidents.

*Socrate et Platone dicitur, et de omnibus, quibus natura inest humana. Reliqua vero Prædicabilia, (prout inferius patebit) eadem de causa, tam de specie quam numero differentibus dicuntur.*

Et N. B. ex recepto more loquendi, Genus et Speciem, *prædicari in* (i. e. respondere quæstioni factæ per) *Quid*<sup>1</sup>; Differentiam in *Qualequid*; Proprium et Accidens in *Quale*. Unde facile est conficere vulgatas Prædicabilium definitiones. Nam Genus definitur, *Prædicabile quod prædicatur de pluribus specie differentibus in Quid*. Differentia, *quod de pluribus specie vel numero differentibus in Qualequid &c.*<sup>2</sup>

Top. iv. 2. 11.  
Isag. 2. 18.  
10. 6. 11. 5.  
15. 2.

Isag. 2. 8.  
2. 21.

Isag. 3. 17.

<sup>1</sup> *Prædicatur in Quid*. i. e. is expressed by a noun substantive: *in Quale*; by an adjective. See Aquinas, Opusc. xlviii. cap. 2. (Cf. Abelard, De Gen. et Sp. p. 528. ed. Cousin.) That the distinctions of substance, quality, and the other categories, are founded on grammatical grounds, is shewn by Trendelenburg, Excerpta, §. 8.

The reader of Locke must not confound this distinction with that between *substances* and *modes*; Essay, b. ii. ch. 12. (Cf. Descartes, Princ. i. 48. Port Royal Logic, p. i. ch. 2.) A quality is predicated *in quid* of another quality, as well as a substance of a substance; e. g. "Prudence is a virtue." Cf. Pacius on Top. i. §. 3. Port Royal Logic, part i. ch. 7. On the import of the substantive and the adjective, some valuable remarks will be found in Horne Tooke, Div. of Purley, part ii. ch. 6.

The distinction between *Qualequid* and *Quale* is not warranted by Porphyry. According to him, Differentia, Proprium, and Accidens are all predicated, ἐν τῷ ὁποίῳ τί ἐστίν. Boethius distinguishes them as *Quale in substantia* and *Quale non in substantia*. The *vulgatæ definitiones* which follow are the original definitions of Porphyry adopted by most subsequent Logicians.

<sup>2</sup> *Specie vel numero*, i. e. generic difference *de specie dif-*

Patet 2<sup>o</sup>. *Genus*\* esse *Totum* quiddam, nempe *Logicum*, sive in modo loquendi; quatenus continet (i. e. prædicationis ambitu complectitur) species tanquam *partes* sui *subjectivas*. *Speciem* quoque *Totum* esse, nempe *Metaphysicum*, sive in modo concipiendi; quatenus continet (i. e. ad perfectionem sui postulat) *Genus* tanquam *partem* sui *essentialem*. Unde *Differentia* *Generi* accedens, dicitur *Genus* ipsum *dividere*, quatenus ejus significata distinguit, et *speciem constituere*, quatenus ejus essentiam complet.

Arist.  
Metaph.  
IV. 25. 2, 3.  
Isag. 8. 8.

Isag. 3. 7,  
13.

*ferentibus; specific, de numero differentibus.* But this would not be allowed by Porphyry, according to whom *differentia* is always predicated *de specie differentibus*. The remaining definitions might be supplied as follows; *Species, quod de pluribus numero differentibus in Quid. Proprium, quod de pluribus numero differentibus in Quale. Accidens, quod de pluribus genere vel specie vel numero differentibus in Quale.* The two last, however, are not given as definitions by Porphyry.

\* *Genus* is a whole in *Predication*, containing various species as subjects under it. *Species* is a whole in *Definition*, containing genus and *differentia* as parts of the essence. Hence if we consider *Definition* as within the province of *Metaphysics*, (see p. 33, note 1,) the latter relation of part to whole may fairly be called *Metaphysical*. The former may be called *Logical*, as implied in the *Logical* theory of the *Proposition*, as well as in the *dictum de omni et nullo*. But the nomenclature is objectionable, as introducing a point at issue between two schools, and inconsistent with Aldrich's subsequent compromise between them in *Definitio Metaphysica sive Logica*. It is better to call *Genus Totum Universale*, *Species Totum Essentiale*. Cf. Crakanthorpe, *Logica*, lib. ii. cap. 5. The same distinction is sometimes expressed by the terms *Whole of extension*, and *Whole of comprehension*. Port Royal Logic, pt. i. chap. 6.



Isag. 2. 23, 28. §. 6. *GENUS* aliud *Summum*, aliud *Subalternum* est: *Species* quoque, in *Subalternum* et *Infimam* Isag. 2. 23, 29. distinguitur. 'Genus summum, est quod nulli, Species infima, quæ omni *cognato Generi* subjicitur: Isag. 2. 24, 30. Genus vel Species subalterna<sup>2</sup>, quæ et cognato

' Of summa Genera, Aristotle enumerates ten, commonly called the ten Categories or Predicaments. These are οὐσία, ποσόν, ποιόν, πρὸς τι, ποῦ, ποτέ, κείσθαι, ἔχειν, ποιεῖν, πάσχειν; usually translated, Substance, Quantity, Quality, Relation, Place, Time, Situation, Possession, Action, Passion. The Categories have by different commentators been regarded as a classification of names, of things, and of both; and have been alternately banished to Metaphysics, and recalled to Logic. Whatever position they may hold in the Metaphysical writings of Aristotle, in his Logical ones they are expressly declared to be a division of the notions signified by simple terms. In this point of view they may be defined as the different highest notions gained by continued abstraction from the subject and different predicates of Propositions. The subject will ultimately lead to the Category of Substance, the different predicates to the nine remaining Categories. The principle of distinction is probably *grammatical*, as is shewn at some length by Trendelenburg, *Elementa*, §. 3. q. v.

The six last Categories may be reduced to *Relation*; see Hamilton on Reid, p. 688. It should be observed, that *Ens*, (τὸ ὂν) is not a summum genus to the several Categories, being regarded by Aristotle, and most subsequent Philosophers, as predicable of them, not *univocally*, but equivocally, or rather *analogously*. On the Logical character of the Categories, and the objections raised against them by Kant and others, some able remarks will be found in St. Hilaire's Translation, Preface, p. 68, sqq.

<sup>2</sup> *Species subalterna*. Here the word species has changed its meaning. In the original definition it meant a certain relation in which a predicate may stand to its subject. Man is a Species to Socrates. It now means a certain relation in

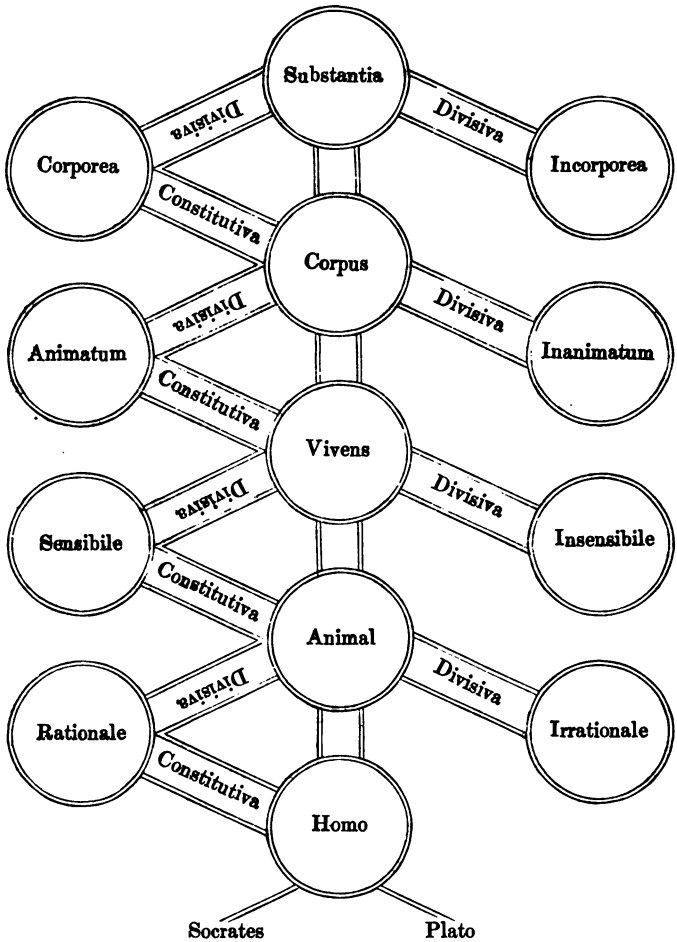
Generi subjicitur, et de cognata Specie prædicatur. Voco autem *Cognata*, quæ ex iisdem Individuis perpetua abstractione colliguntur; ut *Homo*, *Animal*, *Vivens*, *Corpus*, *Substantia*: quæ ex *Socrate*, *Platone* &c. expurgatis continue differentiis oriuntur.

[Hanc seriem ita placuit describi ut quodammodo referret arborem: saltem a Porphyrio sic descripta *Porphyrianæ Arboris*\* nomen habet. Hujus *truncum* referebat *linea directa*, in qua Genera et Species scribebantur: in *suprema* Tabula Genus summum, in *ima* Species infima: unde Nomina. Inter hæc Media Subalterna, suo ordine.

Differentiæ ad latus sunt dispositæ; ad quas ductæ a Generibus suis lineæ *Ramorum* instar pertinebant. Individua sub specie infima oblique descripta sunt, quasi propagines Radicis.]

which a subject may stand to its predicate. Man is a Species to Animal. The theory of an *infima* species, though held indifferently by writers of all opinions, can only be consistently maintained by a *Realist*. See Appendix, note A.

\* By the Greek Logicians it was sometimes called the *ladder* (κλίμαξ) of Porphyry.

ARBOR PORPHYRIANA<sup>b</sup>.

<sup>b</sup> This delineation of the Arbor Porphyriana is first given by Aquinas, Opusc. xlviii. Tract. ii. cap. 3. In all the earlier specimens, *Animal Rationale* is placed between *Animal* and *Homo* as the *proximum genus*, and divided into *mortale* and *immortale*, in accordance with Porphyry's definition of Man.

Quare 1. *Differentia*°, est vel *Generica*, quæ <sup>Isag. 3. 6, 14.</sup> constituit Speciem Subalternam; vel *Specifica*, quæ infimam: hæc est, quæ de numero differentibus, illa, quæ de specie differentibus prædicatur. Exempla, *Sensibile* et *Rationale*.

2. *Proprium* quoque, vel *Genericum* est, quod necessario comitatur essentiam Generis summi vel subalterni<sup>d</sup>; atque ex illa adeo fluere atque oriri dicitur: vel *Specificum*, quod fluit ab essentia speciei infimæ: Illud, itaque de pluribus speciebus, hoc, de una specie et pluribus Individuis prædicatur. Exempla, *Mobile* et *Risibile*.

*Proprium* tamen aliunde quadrifariam dicitur°. <sup>Isag. 4. 1.</sup>

° The term specific difference (*διαφορά ειδωσις*) has a different meaning in Porphyry. It is opposed to *accidental difference* (*διαφορά κατὰ συμβεβηκός*), and marks the *differentia* proper, which distinguishes species from species, (whether subaltern or infima,) as opposed to accidents, which only distinguish between individuals.

<sup>d</sup> A *summum genus* can manifestly have no constitutive *differentia*; but it may have properties. There may be attributes forming no portion of the universal nature (or conception) of substances, which are notwithstanding found in all substances and at all times. Such properties of the *summum genus* are enumerated by Aristotle, *Categ.* ch. 5. These were in the scholastic theory regarded as flowing from the simple essence; those of all subordinate classes from the *differentia*.

° Porphyry, following Aristotle, does not distinguish *Property* from *Accident* as flowing necessarily from the essence, but as coextensive and simply convertible with its subject. In this he is followed by Boethius; the other distinction, however, appears as early as in the commentary of Albertus Magnus, and seems to have been derived from the Arabians. (Cf. Albert. de *Predicab.* Tract. vi. cap. 1.) The *ἰδιον* of Porphyry answers to the

1. Quod convenit soli, sed non omni; scil. soli Speciei, sed non omni ejus Individuo; ut *homini esse Grammaticum*. 2. Quod omni, sed non soli; ut *homini esse bipedem*. 3. Quod omni et soli, sed non semper; ut *homini canescere*. 4. Quod omni, Isag. 14, 7. soli, et semper; ut *homini risibilitas*. Hujusmodi Proprium est, quod constituit Quartum Prædicabile.
- Isag. 5. 1. *Accidens*, cum essentiæ junctum sit continenter, adesse igitur vel abesse potest, salva interim essentia subjecti; cui tamen aliquando tam tenaciter inhæret, ut cogitatione sola divelli atque separari possit; ut *Mantuanum esse, a Virgilio*. Quare vocatur *Inseparabile*<sup>1</sup>. Quod autem actu

fourth kind of property mentioned in the text. The other three are *accidents*; the first and third separable; the second inseparable, but still only an accident, as being predicable of more subjects than *homo*. On the scholastic theory, it is also an accident, as not flowing necessarily from *rationale*, the differentia. Aristotle, who defines man ζῷον ρέζον διπρουν, would regard *bipes* as a differentia. It may be observed that, upon the principles of Aristotle and Porphyry, a generic property can only be regarded as a property with respect to the highest species of which it is predicable. As regards all subordinate species, it must be considered as an *accident*. *Mobile*, for example, a property of *corpus*, is an accident to *animal*, and to *homo*, as not convertible with them. This may be fairly inferred from Top. ii. 3, 5. and is also maintained by Avicenna and Albertus Magnus; see Albert. de Predicab. Tract. ix. cap. 1. On the theory of *necessary connexion*, it may remain a property; but on this authorities are divided.

<sup>1</sup> We must distinguish between the accidents of a class and those of an individual. Of the former, those are *inseparable*, which, though not connected with the essence by any law of

sive reipsa separari potest, ut albedo a pariete, dicitur *Separabile*.

§. 7. QUEMADMODUM Vox Singularis dicitur *Individuum*, ita et Communis *Dividua* dici potest. An. Pr. I. 31. 1. An. Post. II. 5. 1. II. 13. 7. Eam enim per Metaphoram dividere dicitur, qui plura ejus significata recenset; nam in uno multa distinguit. Ita qui *animal* dicit *esse* (i. e. vocabulum *animal* *significare*) *hominem* et *brutum*, dicitur *animal in hominem brutumque dividere*.

Quare *Divisio*<sup>s</sup>, est distincta enumeratio plurium,

causation, are as a matter of fact found in all the members of the class, and can be the predicates of an *universal* proposition; e. g. "all crows are black." The *separable* accidents are found in some members of the class and not in others, and therefore can only be predicates of *particular* propositions; e. g. "some horses are black." Of the accidents of the individual, the inseparable can be predicated of their subject at all times; e. g. "Virgil is a Mantuan;" the separable only at certain times; e. g. "Virgil is sitting down."

<sup>s</sup> Division was employed by Plato and others as a method of demonstrating definitions. Aristotle shews that the reasoning is unsound, and always involves a *petitio principii*. For this reason he calls it a kind of weak syllogism, though he allows it to be useful for testing definitions when gained: see Appendix, note B. Among the later Peripatetics, Division seems to have been held in higher estimation; a separate treatise on the subject having been composed by Andronicus Rhodius. From them it descended to Boethius, whose book *de Divisione* is the principal authority from which subsequent logicians have drawn.

According to Boethius, the word Division is used in three principal senses. 1. Division of a genus into species. 2. Division of a whole into parts. 3. Division of an equivocal term into its several significations. Of these, according to Cicero, Top.

quæ communi nomine significantur. Estque analogia distributioni totius in partes. Unde et nomen ipsum Commune dicitur *Totum Divisum*, et distincta ejus significata, *Partes* sive *membra dividenda*, et bene dividendi leges statuuntur tres.

1. <sup>h</sup> *Dividentia* sigillatim minus contineant (i. e.

ch. 6. the first is properly called *Divisio*, the second, *Partitio*. "In partitione quasi membra sunt; ut corporis, caput, humeri, manus, latera, crura, pedes, et cetera: in divisione, formæ sunt, quas Græci ideas vocant; nostri, si qui hæc forte tractant, species appellant." Cf. Quintil. v. 10. vii. 1. In Division, the whole or its definition can be predicated of each part, as "Homo est animal," "Homo est vivens sensibile." In Partition this cannot be done. Boethius, however, includes under his second head, not only the enumeration of the component parts of an individual, but also that of the individuals contained under an *infima species*. "Ut cum dico domus aliud esse tectum, aliud paries, aliud fundamentum; cumque hominis dicimus partes esse Catonem, Virgilium, Ciceronem." The last in one respect more resembles division proper; as the name and definition of the whole are predicable of each part. But on account of the infinite number of individuals, and consequent impossibility of exhausting the species, this is not generally reckoned as a division proper.

The division of an equivocal term, as *canis* into *animal*, *sidus*, *piscis*, is sometimes called *distinction*. The test of this is, that the name is predicable of each member, but not the same definition. This is useful for separating the senses of an ambiguous term before defining it. See Top. vi. 2. 1.

<sup>h</sup> For the due observance of these rules, it is desirable that the divisions consist of as few members as possible. Some recommend *dichotomy*, or a division of every genus into two species by means of opposed differentiæ. Of the four kinds of Opposition, Boethius admits for this purpose contraries, positive and privative terms, and also contradictories as sometimes unavoidable; but rejects relatives. Aristotle censures

arctius significant) quam Divisum. Nam Totum<sup>Top. VI. 6.</sup> est majus partibus singulis. 2. Dividentia conjunctim plus minusve ne contineant quam Divisum. Nam Totum est æquale partibus universis. 3. Membra Divisionis sint opposita, (i. e. in se invicem ne contineantur :) nam sine distinctione frustra est partitio.

§. 8. DIVISIONEM excipit<sup>i</sup> (quæ per Metaphoram quoque dicitur) *Definitio*; cujus est, assignare

the use of privative and indefinite terms, and approves of division by *contraries*. (See Top. vi. 6. 3. de Part. Anim. i. 3.) Here dichotomy is only practicable when the contraries admit no medium between them. Cf. Cat. 10, 18. Top. vi. 6. 1. Examples of dichotomy by contraries may be found in the Arbor Porphyriana. For a threefold division of the same kind, see Eth. Nic. vii. 6, 5. τῶν γὰρ ἡδέων ἓνα φύσει αἰπερά, τὰ δ' ἐναντία τούτων, τὰ δὲ μετὰξὺ. Dichotomy by *contradiction*, which Aristotle censures, had been a favourite method with Plato, as it afterwards was with Ramus and his followers. See Hamilton's Reid, p. 689. Cf. Trend. Elem. §. 58. Erläuterungen, p. 106.

But regarding Logic as a formal science, dichotomy by contradiction alone can have place in it. In any other division, knowledge of the *matter* of a conception is required. And even in this, we do not know *a priori* that both members of the contradiction are included within the sphere of the conception, but only that one or both must be. Cf. Kant, Logik. §. 113.

<sup>i</sup> *Excipit*. The reason of this order is given by Abelard: "Quoniam vero divisiones definitionibus naturaliter priores sunt, quippe ex ipsis constitutionis suæ originem ducunt, in ipso quoque tractatu divisiones merito priorem locum obtinebunt, definitiones vero posteriorem." *Dialectica*, ed. Cousin. p. 450. This order, however, is not uniformly observed by Logicians.



conceptus et voces, quibus ea, quæ ab invicem distincta volumus, velut agrorum fines, ex limitibus suis dignoscantur. Quæ cum definitis notiora esse debeant magisque obvia, Definitio vulgo dicitur

Top. I. 5. 1. *Oratio explicativa definiti.* *Oratio* (inquam) ut a nomine distinguatur; *Explicativa* quoque, nam et nomen *exprimit*.

An. Post.  
II. 7. 5.

Definitio alia, *Nominalis* est, quæ vocis significationem aperit; alia, *realis*, quæ rei<sup>k</sup> naturam.

<sup>k</sup> *Rei*, i. e. of an universal notion existing in the mind; without entering on the question whether there exists any external universal nature corresponding to it. Since all such notions are represented by words, a *real*, or more correctly speaking a *notional*, definition, will at the same time unfold the meaning of the word by which the given notion is represented. Still the two kinds of definition must not be confounded. A real definition has primarily for its object to analyse a complex notion into its component parts. Words are employed *secondarily*, though unavoidably, as signs, both of the whole notion, and of the simpler notions of which it is composed. But the object of nominal definition is to determine of what notion, simple or complex, a given word is the sign. The notion may be already known, more or less clearly, by means of other signs, though we were not aware of its connexion with the word in question.

If this account of real definition is correct, it will follow that the same notion admits of only one definition; or at least, that the varieties are only such as may be produced by a more or less minute analysis, or by an accidental difference in the manner of expressing the same notion. And nothing can be more clear than Aristotle's testimony on these points, nothing more positive than his repudiation of the so-called *accidental* and *physical* definitions. (Cf. Top. vi. 4, 2. vi. 14, 5. i. 8. 2, 3. Metaph. vi. 11, 15.) Nevertheless, on the strength of a misunderstood passage in the *De Anima*,

*Realis* iterum vel *Accidentalis*, sive *Descriptio*, quæ definito accidentia (puta causas, effectus, proprietates aliaque id genus) assignat; vel *Essentialis*, quæ partes essentiae constitutivas. *Essentialis* denique, vel *Metaphysica* sive *Logica*<sup>1</sup>, quæ Genus et Differentiam; vel *Physica*<sup>m</sup>, quæ partes Essentiae

(i. 1, 16.) the threefold division of real definition has been fathered on the Stagirite. For a fuller account of Aristotle's doctrine, see Appendix, note B.

<sup>1</sup> *Metaphysica sive Logica*. On this point the two great sects of the Schoolmen were at issue. The Realists, following the Arabians, divided Logic into two parts; one, which treated of the essence of incomplex notions and things by *definition*; the other, of the truth of propositions as determined by *argumentation*. To this latter the greater part of the Aristotelian Logic was regarded as belonging. The former was supposed to have formed a lost portion of the ancient science. The Nominalists, on the other hand, and more correctly, maintained that to investigate the essences of things belonged to the province of Metaphysics; the Logician, as such, assigning no actual definitions, but borrowing them as mere examples from the science to which they properly belong. As authorities for the two views, compare Albert, de Prædicab. Tract. i. chap. 5, 6. with Occam, Logic, part i. ch. 26.

<sup>m</sup> Physical definition is rejected by Aristotle, (Metaph. vi. 11.) on the ground that the physical parts are not parts of the species, but of the individuals. Aldrich's expression, "*partes essentiae physicas*," cannot be tolerated, unless we regard universal notions as not merely real substances, but corporeal. In the example given by Aldrich, the so-called Physical definition may be regarded as merely an indirect mode of expressing the same notion that the Metaphysical definition expresses directly. It is thus merely an accidental variation of language easily reduced to the direct form, and is so regarded by Albert, de Præd. Tract. i. chap. 6. and by Occam, pt. i. ch. 26. In all other cases it is no definition at all.

physicas, i. e. realiter distinctas : nam Genus et Differentia sola mente distinguuntur.

E. g. Definitur homo *Nominaliter*<sup>a</sup>, qui ex humo. *Accidentaliter*<sup>o</sup>, Animal bipes implume. *Metaphysice*<sup>p</sup>, Animal rationale. *Physice*, Ens naturale constans corpore organico et anima rationali.

<sup>a</sup> Most Logicians reckon two principal methods of nominal definition : 1. by a synonymous term, e. g. "ensis est gladius : " 2. by Etymology, as in Aldrich's example. The former is in fact *translation*, it being indifferent whether the synonyms belong to the same language or not ; the latter will in many cases be no definition at all ; a large number of words having quite lost their etymological meaning. Neither of these methods are countenanced by Aristotle ; see Appendix, note B. The former may be traced to the Greek Commentators ; see Alexander, in Metaph. p. 442. ed. Bonitz. The latter is an innovation borrowed from the Rhetoricians, by whom it was called *Notatio*. See Cicero, Top. ch. 8.

<sup>o</sup> Accidental definition is composed of genus and one or more *properties*. Accidents properly so called are expressly rejected as useless in definition by Porphyry, Isag. 3. 15. and by Boethius, Opera, p. 3, though admitted by some subsequent authorities. Hence *animal risibile* would be a better example than Aldrich's *animal bipes implume*. But the majority of Logicians have very properly regarded accidental definition, in any form, as no definition, but merely *description*. Cf. Albert. l. c. Occam, pt. i. ch. 27.

<sup>p</sup> Metaphysical definition, the only proper definition in the strict sense of the term, being by genus and differentia, (or more correctly by genus and *differentiæ* ; see Top. i. 8, 3. and *supra*, p. 20, note r.) it will follow, that all definable notions must be *species*. Hence *summa genera*, which have no differentia, and *individuals*, which are distinguished only by accidents, are not definable. See Arist. Metaph. iv. 3, 6. (where for *εἶς* read *οἷ*, supported by two Mss. and by Alexander, Schol. p. 693, a. 8.) vi. 15. 2. The supposed difference on this

Bonæ Definitionis leges potissimum tres sunt.

1. Definitio sit adæquata definito: alias non <sup>Top. VI. 1. 1.</sup> explicat definitum. Quæ enim angustior est, explicat tantum *partem*, cum definitum sit *totum*; quæ laxior, explicat *totum*, cum definitum sit tantum *pars*. 2. Ut *per se* clarior<sup>a</sup> sit et notior <sup>Top. VI. 4. 2, 7.</sup> definito: alias non explicat omnino. *Dico* tamen *per se*, quia *per accidens* potest minus intelligi quod notius est sua natura. 3. Ut justo *vocum* <sup>Top. VI. 2. 4.</sup> *propriarum*<sup>r</sup> numero absolvatur: nam ex *Meta-* <sup>Top. VI. 2. 3. IV. 3. 4.</sup> *phoris* oritur ambiguitas, ex nimia brevitate obscuritas, ex prolixitate confusio.

point between Aristotle and Locke, or rather Des Cartes, may be reduced to a verbal question. See Appendix, note B.

<sup>a</sup> *Per se clarior*; i. e. composed of parts greater in extension than the *definitum*, though less in comprehension; as are the genus and differentia, as compared with the species. For the more universal notions are *γνωριμώτερα φύσει*, though individuals and lower species are *γνωριμώτερα ἡμῖν*. See An. Post. i. 2. 5. Top. vi. 4. 7, 9.

<sup>r</sup> *Vocum propriarum*; i. e. words in common use, called in the Rhetoric, (iii. 2. 2.) *κύρια ὀνόματα*, i. e. *sanctioned* by popular use; “quem penes arbitrium est et jus et norma loquendi.” Cf. Poet. 21. 5. λέγω δὲ κύριον μὲν ὃ χρῶνται ἕκαστοι. In the Topics, (vi. 2. 4.) they are called *established* names, (*κείμενα ὀνόματα*.)

## CAP. II.

*De Propositione Categorica pura.*

§. 1. SECUNDA Pars Logicæ agit de *Propositione*<sup>a</sup> sive *Enuntiatione*; quod est signum secundæ operationis Intellectus, sive Judicium verbis expressum.

Quare, ad Propositionem legitimam requiritur.

De Int. 5.1. 1. Quoad vocem, ut sit *Oratio affirmans*<sup>b</sup> vel *negans*, quæ est ejus *essentia*.

De Int. 4.3. 2. Quoad sensum, ut *verum vel falsum significet*, (id scil. quod res est, vel secus, dicat,) quod essen-

<sup>a</sup> "Sed cum disseramus de Oratione, cujus variæ species sunt, .....est una inter has ad propositum potissima, quæ pronuntiabilis appellatur, absolutam sententiam comprehendens, sola ex omnibus veritati ut falsitati obnoxia: quam vocat Sergius *effatum*, Varro *proloquium*, Cicero *enunciatum*, Græci *protasin* tum *axioma*; .....familiarius tamen dicitur *propositio*." Apuleius de Dogm. Platonis, lib. iii. He has not distinguished between ἀπόφασις and πρότασις,—the former of which is rendered by Boethius *enunciatio*, the latter *propositio*. See Trendelenburg, Elem. §. 2. "Ἀπόφασις quum ad syllogismum instituendum tanquam propositio quæ vocatur præmissa adhibetur, πρότασις dicitur." And so Aquinas, Opusc. xlviii. Tract. de Enunc. cap. 1. "Propositio nam solum dicitur de præmissis ipsius syllogismi, sed enunciatio tam de præmissis quam de conclusione." The distinction, however, is not implied in the definitions of the two by Aristotle, de Int. 5. 5. and Anal. Pr. i. 1. 2.

<sup>b</sup> *Oratio affirmans*, καράφασις—*negans*, ἀπόφασις. These are literally rendered by Apuleius, *Propositio dedicativa* and *abdicativa*.

tiæ necessario nexum, et proinde *proprietas* est. Unde et

3. Non est ambigua; sic enim orationes esset. Nec 4. Solœca vel mutila; sic enim nihil significaret.

Quare, ea demum *Propositio* legitima censebitur, De Int. 5.5. Anal. Pr. I. 1. 2. quæ, juxta definitionem vulgatam, est *Oratio Indicativa*\*, congrua et perfecta, verum vel falsum significans, sine ambiguitate.

§. 2. Ejus Divisiones variæ sunt;

1. *Categorica*<sup>a</sup> est, quæ enuntiat absolute; ut, *Homo est risibilis*. *Hypothetica*, quæ sub conditione; ut, *si homo est rationalis est risibilis*. Vel *dies est vel nox*.

Quod *Categorica* dicit, nihilo nexum est; quasi per se subsistens: quod *Hypothetica*, conditioni substat. Unde et hæc Divisio peti dicitur a *Substantia* Propositionis; et per ejus membra respondetur interroganti, *Quæ est Propositio?*

*Categorica* rursus dividitur in *Puram* et *Modalem*°. *Hypothetica* in *Conditionalem*, *Disjunctivam*,

\* The proposition is defined by Aristotle, λόγος ἀποφαντικός, which is translated by Petrus Hispanus, *Oratio indicativa*, and better by Boethius, *Oratio enunciativa*. The rest of Aldrich's definition is superfluous.

<sup>a</sup> *Categorica*. In Aristotle κατηγορικὸς always signifies affirmative, and is opposed, not to ὑποθετικός, but to στερητικός. The later sense probably originated with Theophrastus, who first expounded the hypothetical syllogism. See Sir W. Hamilton, Ed. Rev. No. 115. p. 221.

° Aristotle, in de Int. ch. 12. 1. enumerates four modes; the

Anal. Pr. &c. *Categorica pura, sive Propositio de inesse*,  
I. 2. 1.  
De Int. 12. est quæ pure affirmat vel negat; i. e. simpliciter

*necessary*, the *impossible*, the *contingent*, and the *possible*. (*ἀναγκαῖον—ἀδύνατον—ἐνδεχόμενον—δυνατόν*.) These he afterwards, Anal. Pr. i. 2. 1. reduces to two, the necessary and the contingent. See St. Hilaire's Translation, Preface, p. 66. That he adds the true and the false is questionable; the words *ἀληθές, οὐκ ἀληθές*, in de Int. 12. 10. are perhaps only intended to mark the previous four pairs as contradictories, of which the one must be true the other false. Subsequent Logicians, following the Greek Commentators, have multiplied the number of modes *ad infinitum*. Any adverb annexed to the predicate, "*homo currit velociter*," or even an adjective qualifying the subject, "*homo albus currit*," was regarded as forming a modal. The name *τρόπος*, as applied both to the modes of propositions and to those of syllogisms, is not Aristotelian, but comes from the Greek Commentators. (Ammonius Schol. p. 130. a. 16.)

Are modals to be excluded from Logic? I speak of Aristotle's modals only, which by no means carry with them all the rest. That the determination of the *implied* matter of a *pure* proposition is extra-logical can hardly be denied; see below, p. 42. But the case is not so clear with regard to the *expressed* matter of a modal. On this I have remarked in the Preface. For authorities, see, on the one side, Sir W. Hamilton in Ed. Rev. No. 115.; on the other, Kant, Logik, §. 30. and St. Hilaire's Translation, Preface, p. 62.

<sup>1</sup> *De inesse*,—*τοῦ ὑπάρχειν*. We find two expressions in Aristotle, both of which are sometimes rendered by "*being in*." 1. *ὑπάρχειν*, by which the *predicate* is said to be in the *subject*. This is equivalent to *κατηγορεῖσθαι τὸ Α ὑπάρχει παντὶ τῷ Β* = *τὸ Α κατηγορεῖται κατὰ παντὸς τοῦ Β* = All B is A. 2. *εἶναι ἐν*, by which the *subject* is said to be in the *predicate*. *Α ἐστιν ἐν ὅλῳ τῷ Β* = All A is B. This is exactly the reverse of *κατηγορεῖται*. The memorable question at issue between Reid and Gillies, (see Hamilton on Reid, p. 684.) turns on this distinction. The former uses "*being in*" as a translation of *ὑπάρχειν*, the latter, of *ἐν ὅλῳ εἶναι*.

dicit Prædicatum inesse, vel non inesse, subjecto; ut, *Homo est animal. Homo non est lapis.* Modalis, quæ cum *Modo*, h. e. vocabulo exprimente quomodo Prædicatum insit subjecto; ut, *Necesse est hominem esse animal. Impossibile est hominem esse lapidem.* De Categorica pura, et quidem sola, impræsentiarum loquor; de cæteris alibi dicturus.

2. *Affirmativa*<sup>a</sup>, est cujus Copula affirmativa est; De Int. 6.1. ut, *Homo est animal. Non progredi est regredi.* *Negativa*, cujus negat; ut, *Homo non est lapis. Nullus avarus est dives.* *Vera*, quæ quod res est dicit; ut, *Homo est animal. Falsa*, quæ secus; ut, *Homo est lapis.* Et cum per hasce species bene respondeatur interroganti, *Qualis est Propositio?* (respondent enim per Differentiam et Proprium quæ in quale prædicantur) dicuntur hæ duæ divisiones peti a *Qualitate Propositionis*. Prior a *Qualitate Vocis*, sive *Essentiali*; Posterior a *Qualitate Rei*, sive *Accidentaria*.

3. *Universalis*<sup>b</sup>, est quæ subjicit terminum communem (cum signo universali, *omnis, nullus, &c.* De Int. 7.1. An. Pr. 1. 1. 2.)

<sup>a</sup> Κατάφασις ἐστὶν ἀπόφανσις τινος κατὰ τινος. Ἀπόφασις ἐστὶν ἀπόφανσις τινος ἀπὸ τινος. Aristotle de Int. 6. 1. "Affirmatio est enunciatio alicujus de aliquo. Negatio est enunciatio alicujus ab aliquo." Boethius, de Int. p. 332. Aldrich's definition is directly applicable only to propositions *tertii adjacentis*.

<sup>b</sup> *Universal*, καθόλου. *Particular*, ἐν μέρει, ὅτι, κατὰ μέρος. *Indefinite*, ἀδιόριστος, An. Pr. i. 1. 2. *Singular*, καθ' ἑκάστων, (De Int. 7. 1.) *Omnis* is the sign of an universal proposition only when taken *distributively*, as, *Omnis homo est animal*; when taken *collectively*, as, *Omnes Apostoli sunt duodecim*, the proposition is singular.



adeoque) pro universis suis significatis distributive sumptum. *Particularis*, quæ terminum communem (cum signo particulari *aliquis*, *quidam*, &c. adeoque) ex parte tantum significantem. *Singularis*, quæ vocem (vel sponte, vel ex signo saltem) Individuam<sup>i</sup>; ut, *Socrates legit*. *Hic homo est doctus*. *Indefinita*<sup>k</sup>, quæ (terminum communem sine signo, et proinde) ancipitem: nam manente formula, vim recipit diversam; ut, *Homo est animal*, nempe *omnis*: *Homo est doctus*, *aliquis* scilicet.

Petitur hæ Divisio a *Quantitate*<sup>l</sup> Propositionis:

<sup>i</sup> Individual names are distinguished as *individua signata*, expressed by a proper name, as *Socrates*; *individua demonstrativa*, by a demonstrative pronoun, *hic homo*; *individua vaga*, by an indefinite pronoun, *aliquis homo*, *quidam homo*: a distinction found in the Greek commentators, Schol. p. 148, b. 23. Cf. Albert, de Prædicab. Tract. 4. cap. 7. Aquinas, Opusc. xviii. de Int. cap. 7. Of these, the two first will clearly form singular propositions. With regard to the last, it has been doubted whether they properly form singulars or particulars. Vives maintains them to be singulars; observing, that *quidam* is not more indefinite than *Socrates* to one who is not acquainted with the man. But there is this difference. If we say, "*quidam concionatur*," "*quidam legit*," there is no evidence that the same person is spoken of in the two propositions; while *Socrates*, except by a mere quibble, will always designate the same person. There may indeed be two persons of the same name; but in this case the name fails to accomplish the intended distinction, and we must specify *Socrates* the son of *Sophroniscus*. Hence *aliquis* and *quidam* are properly called particulars. Cf. Wallis, Logic, lib. 2. cap. 4.

<sup>k</sup> "The term *indefinite* ought to be discarded in this relation, and replaced by *indesignate*." Hamilton on Reid, p. 692.

<sup>l</sup> *Substance—quality—quantity*. Properly speaking, these

nempe numero eorum pro quibus subjectum supponit: unde et per has species bene respondetur interroganti, *Quanta sit Propositio?* Hanc doctrinam Scholastici hujusmodi carmine sunt complexi;

*Quæ? Ca. vel Hyp. Qualis? Ne. vel Aff. Quanta? Uni. Par. In. Sing.<sup>m</sup>*

§. 3. PROPOSITIO Singularis in Syllogismo æque potest Universali<sup>n</sup>. Nam Subjectum ejus supponit pro omni suo significato. *Socrates est homo, Uni-*

are all *qualities* of the Proposition. But the distinction is useful as a mnemonic. Kant distinguishes them as *Relation*, *Quality*, and *Quantity*.

<sup>m</sup> This, and the greater part of the scholastic memorial verses, are found for the first time in the *Summulae Logicales* of Peter of Spain, afterwards Pope John XXI. who died in 1277. He does not, however, profess to be the author of them; indeed some, including the present, are also noticed by his contemporary Aquinas, as established mnemonics. In slight measure he has been anticipated by the Greeks. A mnemonic for the opposition of modals is found in the synopsis of Psellus, and one for the syllogistic moods in Nicephorus Blemmidas.

<sup>n</sup> This is argued at some length in a thesis appended to Wallis's Logic; and is, to say the least, by far the most convenient way of bringing singular propositions under the existing rules of the syllogism. At the same time it may be remarked, that the employment of singular terms as predicates is unnatural, and the reasoning, at least in affirmative syllogisms, worthless. See An. Pr. i. 27. 3. Indeed it may be questioned whether the *ἐκθεσις* of Aristotle (see below, p. 51.) was regarded by him as a syllogism at all. Cf. Aquinas, Opusc. xlvii. Zabarella, de Quart. Fig. cap. 7. Some additional remarks will be found in the Appendix, note D.

versalis est, quia omnis ille Socrates tantum unus est. Indefinitæ quantitas judicatur ex materia Propositionis, sive habitudine connexionis extremorum, quæ triplex est; 1. *Necessaria*°, quando extrema essentialiter conveniunt; 2. *Contingens*, quando accidentaliter tantum; 3. *Impossibilis*, quando essentialiter differunt. Unde Propositio Indefinita pro Universali habetur, in materia impossibili et necessaria; pro Particulari vero, in contingenti.

Quare, Quantitas Propositionis, quatenus ad Syllogismum facit, est duplex: *Universalis* et

° Aristotle does not recognise this account of matter as *understood* in every *pure* proposition, but only as *expressed* in a *modal*. (see above, p. 37.) In the latter case it is no test of quantity, as there are universal and particular propositions of each mode. The distinction in the text, however, seems to have been early introduced. It is implied in the commentary of Ammonius on de Int. 7. (Scholia, p. 115. a. 14.) And Psellus defines the three kinds of matter thus: *Necessary*, when the predicate is of the essence, or a property; *contingent*, when it is an accident to the subject; *impossible*, when a repugnant quality. In this he is followed by Petrus Hispanus. But this consideration of matter is clearly extra-logical. See Sir W. Hamilton, Ed. Rev. No. 115. p. 217. The *Logician* cannot determine a proposition to be necessary or contingent, unless stated as such. The point must be ascertained from the Science to which the proposition materially belongs. The Logician, however, may use indefinites as particulars, not assigning a quantity from the matter, but admitting an indefinite premise (and therefore conclusion) where the rules of the figure do not require an universal. Hence the minor premise in fig. 1. may be indefinite, but not the major. See An. Pr. i. 4. 9.

*Particularis.* Et nota, quod Universalis affirmans symbolum habet A; negans E: Particularis affirmans symbolum I; negans O.

*Asserit A; negat E: Universaliter ambæ.*

*Asserit I; negat O: sed Particulariter ambo<sup>p</sup>.*

In Universali, signum affirmans distribuit tantum Subjectum: Negans, etiam Prædicatum. Nam ut verum sit *Omne a est b*, sufficit aliquod *b* convenire omni *a*: sed falsum est *nullum a esse b*, si vel aliquod *b* conveniat alicui *a*. Eodem argumento, ut sit verum *Aliquod a est b*, sufficit si vel aliquod *b* conveniat alicui *a*: sed falsum est quod *aliquod a non est b*, nisi illud *a* differat a quovis *b*.<sup>q</sup> Et proinde

In particulari, nullus terminus distribuitur, præter negantis prædicatum, quod semper distribuitur.

Quanquam igitur fieri potest, ut prædicatum distribuatur in affirmante, tamen non est neces-

<sup>p</sup> On these lines Wallis remarks, "Non tam erant solliciti de syllabarum quantitate, aut syntaxeos ratione, quam ut Rhythmus constet aut *ῥυθμικόν*. Alii tamen, quo constet versus, pro *sed universaliter*, substituunt *verum generaliter*; et, quo Syntaxi prospiciatur, pro *ambo*, neglecto Rhythmo, substituant *ambæ*; respicientes vocem subintellectam, *propositiones*." The earliest edition, as found in Petrus Hispanus, reads *ambæ* in both lines.

<sup>q</sup> Aldrich assumes the distribution of the predicate in a negative, to prove the simple conversion of E. Those who adopt Aristotle's proof of the latter, (see below, p. 51.) might deduce the former from it. Both however may fairly be allowed to stand on their own evidence.

sarium; sed *per accidens* fit, et *virtute significati*, non *virtute signi*. In statuendis autem Propositionum legibus, spectandum est id tantum, quod structura postulat, non quidquid sensus admittit: cum illud essenziale, et perpetuum sit; hoc mutabile, et incertum.

Hæc igitur regula generalis esto, quod in Propositione A, subjectum tantum distribuitur; in O, tantum Prædicatum; in I, neutrum; in E, utrumque.

§. 4. PROPOSITIONIBUS<sup>r</sup> accidunt *Oppositio* et *Conversio*. *Opponi* dicuntur duæ, quæ, cum subjecta habeant et prædicata omnino eadem, Quantitate tamen, vel Qualitate vocis, vel utraque pugnant.

De Int. 7.  
Anal. Pr.  
II. 15.

Oppositionis<sup>s</sup> doctrina tota colligitur et demon-

<sup>r</sup> *Opposed Propositions*,—*ἀντικειμεναί προτάσεις*, Arist. a term sometimes limited to Contradictories.

<sup>s</sup> As Logic can take no cognisance of *understood* matter, the “necessary impossible and contingent” should be omitted from the table of Opposition. It is no part of the province of the Logician to determine *when* a given Proposition is materially true or false; but only what formal inferences may be made upon the assumption of its truth or falsehood. Hence the Canons of opposition should be expressed only in the hypotheticalal form. They may be briefly given thus:—

1. If A is true; O is false, E false, and I true.
2. If A is false; O is true; E and I unknown.
3. If E is true; I is false, A false, and O true.
4. If E is false; I is true; A and O unknown.
5. If I is true; E is false; A and O unknown.
6. If I is false; E is true, O true, and A false.
7. If O is true; A is false; E and I unknown.
8. If O is false; A is true, I true, and E false.

stratur ex apposito Schemate, in quo, A. E. I. O.

sunt quatuor Propositiones quantitate sua et qualitate signatæ: quæ sunt *v. f.* (hoc est, *veræ* vel *falsæ*) pro materia *n. i. c.* (hoc est, *necessaria*, *impossibili*, *contingente*;) quod ex ipsa materiæ definitione satis patet. De *necessaria*; quia

n. v.			f. n.
i. f.	A. Contrariæ	E.	v. i.
c. f.			f. c.
Subalternæ	Contradictoriæ		Subalternæ
n. v.			f. n.
i. f.	I. Subcontrariæ	O.	v. i.
c. v.			v. c.

Propositionis extrema in ea essentialiter conveniunt; de *impossibili*; quia in ea essentialiter differunt: de *contingenti*; quia secus non esset materia contingens. Inspecto igitur hoc Schemate facile est

1. Oppositionis<sup>t</sup> *species* numerare; quæ sunt

So that from the *truth* of an universal, or the *falsehood* of a particular, we may infer the accidental quality of all the opposed Propositions; but from the *falsehood* of an universal, or *truth* of a particular, we only know the quality of the Contradictory.

<sup>t</sup> *Contradictory*, ἀντιφατικῶς (ἀντικείμεναι). *Contrary*, ἐναντίως. Arist. The term *Subcontrary* (ὑπεναντίως) is not used by Aristotle to denote the opposition of particulars; though he admits the opposition itself, de Int. ch. 7. In Anal. Prior. ii. 15. he calls it an opposition κατὰ τὴν λέξιν, but not κατ' ἀλήθειαν. The term is used by the Greek commentators, (Ammonius, Schol. p. 115. a. 15.) followed by Boethius, Int. ad Syll. p. 564. Subaltern propositions (ὑπαλληλοι) are not noticed at all by Aristotle. The laws

vulgo quatuor: *Contradictoria, Contraria, Subcontraria, Subalterna*.

2. Singularum definitiones conficere. V. g. *Oppositio Contradictoria, est inter* (A. O. vel E. I. hoc est) *duas Categoricas quantitate pariter et qualitate pugnantes. Contraria, inter* (A. E. h. e.) *duas universales qualitate pugnantes &c.*

3. Oppositarum Canones quatuor eruere et demonstrare hunc in modum.

1. Contradictoriæ A. O. vel E. I. sunt in nulla materia simul veræ; in nulla simul falsæ; sed in quacunque una vera, falsa altera.

Soph.  
Elench.  
5. 5.

Sed notandum est, ad Contradictionem requiri quatuor: nempe loqui de eodem 1. *eodem modo*. 2. *secundum idem*. 3. *ad idem*. 4. *in eodem tempore*; quarum conditionum si defuerit aliqua, possunt *Est et Non est* inter se bene convenire. E. g. 1. Cadaver hominis *est et non est* homo: *Est* enim homo mortuus; *Non est* homo vivus. 2. Zoilus<sup>a</sup> *est et non est* niger: *Est* enim crine ruber, niger

of subaltern opposition are first given by Apuleius, De Dogmate Platonis, lib. 3. though he does not give it a name. He is followed by Marcianus Capella. The name is given by Boethius, Intr. ad Syll. p. 566. and in the Commentary on the de Int. The treatise of Apuleius, if genuine, is a production of the second century, contemporary with, or a little prior to, the works of Alexander of Aphrodisias. The three first kinds of opposition are called by him *Alterutræ, Incongruæ, and Suppares*.

<sup>a</sup> Zoilus, see Martial, lib. xii. ep. 54.

Crine ruber, niger ore, brevis pede, lumine læsus,  
Rem magnam præstas, Zoile, si bonus es.

ore. 3. Socrates<sup>\*</sup> *est et non est* comatus: nempe *est*, ad Scipionem, *non est*, ad Xenophontem comparatus. 4. Nestor *est et non est* senex: *Est* enim, si de tertia ejus ætate, *non est*, si de prima loqueris.

2. Contrariæ A. E. in nulla simul veræ; in Contingenti, simul falsæ; in ceteris, una vera, falsa altera; nempe in Necessaria, vera A, falsa E; in impossibili, vera E, falsa A.

3. Subcontrariæ I. O. in Contingenti, simul veræ; in nulla simul falsæ; in Necessaria, vera I. falsa O; in impossibili, vera O. falsa I.

4. Subalternæ A. I. vel E. O. et simul veræ, et simul falsæ, et una vera, falsa altera esse possunt. Nam in Necessaria, simul veræ sunt A. I; in Impossibili, simul veræ E. O; in eadem, simul falsæ, A. I. et in Necessaria, simul falsæ E. O; in Contingenti, (propter A. E. falsas, I. O. veras) A. I. vel E. O. sunt una vera, falsa altera.

Possunt etiam aliter hi Canones Oppositarum,

\* Aldrich has not before mentioned the opposition of *singulars*. "Socrates is wise," "Socrates is not wise." These are contradictories; though the definition does not strictly include them, having inadvertently been worded solely with reference to universals. But they have the essential feature of contradictories, that one is always true, and the other false; (de Int. 7, 8.) and the definition given, Anal. Post. i. 2. 6. will include them:—*Ἀντίφασις δὲ ἀντίθεσις ἥς οὐκ ἔστι μεταξὺ καθ' αὐτήν*. Some Logicians call the opposition of singulars, *secondary contradiction*. Boethius, p. 613, regards them as contradictories. See also Wallis, lib. ii. cap. 5.



cum pluribus aliis, tum hoc quoque modo demonstrari.

1. Contradictoriæ A. O. vel E. I. nec *simul veræ* nec *simul falsæ* esse possunt. Quod enim una negat, idem altera de eodem, secundum idem, affirmat: Id vero fieri nec natura patitur, nec sensus ipse communis. Quare,

*α.* Si Universalis vera sit, particularis, quæ sub ea continetur, vera est. Et

*β.* Si particularis falsa sit, Universalis, quæ eam continet, falsa est: Quoniam enim Subjectum in Universali distribuitur, fit, ut in ea, et in Particulari, idem, de eodem, secundum idem, dicatur: vere igitur et falso simul dici, (hoc est, affirmari simul et negari) nequit.

2. Contrariæ A. E. non possunt esse *simul veræ*: sed in materia contingenti sunt *simul falsæ*. Nam 1°. Exponatur Universalis vera; Ergo particularis vera per 1. *α*; Ergo quæ particulari contradicit falsa per 1. Sed hæc est Expositæ contraria.

2°. Exponatur Universalis de materia contingenti; Ergo et hæc falsa est, et Particularis vera, vi materiæ: Ergo quæ particulari contradicit falsa per 1. Sed hæc est Expositæ Universali contraria.

3. Subcontrariæ I. O. *simul falsæ* esse non possunt: sed *simul veræ*, vel *una vera, falsa altera*, esse possunt. Sunt enim duæ duarum Contrariarum Contradictoriæ, ut in Schemate patet, cum contrariis decussatim comparandæ. Quare, (per 1. et 2.) Subcontrariæ sunt in nulla materia simul

*falsæ*; quia contrariæ in nulla *simul veræ*: Subcontrariæ in contingenti simul veræ; quia Contrariæ in eadem simul falsæ. In Impossibili vero, et Necessaria, eadem utrisque lex est, ut sit una vera, falsa altera.

4. Subalternæ A. I. vel E. O. et *simul veræ*, et *simul falsæ*, et *una vera, falsa altera*, esse possunt. Nam 1°. Si subalternans (nempe Universalis) vera sit, Subalternata (sive Particularis) vera est (per 1. a.) 2°. Si Subalternata falsa, Ergo Subalternans falsa (per 1. β.) 3°. Si Subalternans falsa, Ergo quæ illi contradicit vera (per 1.) Ergo hujus Subcontraria, quæ est Expositæ subalternata, vera vel falsa esse potest (per 3.) 4°. Si Subalternata vera, Ergo quæ illi contradicit falsa (per 1.) Ergo hujus Contraria, quæ est expositæ Subalternans, vera vel falsa esse potest (per 2.)

§. 5. *CONVERTI* dicitur Propositio, cujus extrema <sup>An. Pr. I.</sup> transponuntur<sup>2</sup>. Variis id modis fieri potest, sed

’ It has been before observed, that the terms of a logical proposition are the noun and the verb; the former as subject, the latter as predicate. In propositions *tertii adjacentis*, the copula and predicate are considered as equivalent to a single verb. When the terms are transposed, the noun must become a verb to form the new predicate, and the verb a noun to form the new subject. For this reason, all propositions should be resolved into the form *tertii adjacentis* before conversion; in order that the predicate may be freed from the consignification of time, so as to form a noun, and the copula may be left to unite with the subject and form a verb. To give more minute directions would be to encroach upon the province of

præsertim duobus<sup>a</sup>: 1. *Simpliciter*, quando tam quantitas, quam utraque qualitas servatur. 2. *Per accidens*<sup>a</sup>, quando servata qualitate, quantitas mutatur.

*f* *Ec I Simpliciter convertitur Ev A per Acci*<sup>b</sup> et conversio utrobique illativa est.

the Grammarian: we must be guided by the idiom of the language we are using. In Latin, e. g. the substantive acquires an adjective power, and the adjective a substantive, without change of form; e. g. "nullus sapiens est iracundus," "nullus iracundus est sapiens." In English we must say, "No angry man is wise." Rules on this point are extra-logical.

The directions of some logicians as to the conversion of past and future time, e. g. "nullus senex erit puer," are also, logically speaking, out of place here, though practically helps to a beginner. For these tenses not being *ρήματα*, the sentence is not, as it stands, a logical proposition; and should be reduced to such, before it comes into the hands of the converter.

<sup>a</sup> Aristotle's account of conversion differs somewhat from this. He divides conversion into universal and particular, according to the quantity of the proposition *after conversion*. Consequently E is converted *universally*, A and I *particularly*. He does not recognise any conversion of O. Simple conversion, (*ἀπλὴ ἀντιστροφή*), is mentioned by Philoponus, Scholia, p. 148. b. 21. Boethius uses the terms *generalis* and *per accidens*.

<sup>a</sup> *Per accidens*; so called because it is not a conversion of the universal *per se*, but by reason of its containing the particular. For the proposition "Some B is A," is *primarily* the converse of "Some A is B," *secondarily* of "All A is B." See Boethius, de Syll. Cat. p. 589.

<sup>b</sup> *A* *at O*, *per contra*; *sic fit conversio tota*.

Conversion by contraposition, which is not employed by Aristotle, is given by Boethius in his first book, *De Syllogismo Categorico*. He is followed by Psellus, and Petrus Hispanus, the latter of whom first gives the mnemonic, as above.

Nam 1. sit vera E°, puta *Nullum A est B*: Ergo (cum uterque terminus distribuatur) quodvis A differt a quovis B. Ergo vicissim: Ergo *Nullum B est A*. 2. Sit vera I: Ergo falsa est ejus Con-

It should be observed, that the old Logicians, following Boethius, maintain, that in conversion by contraposition, as well as in the others, the *quality* should remain unchanged. Consequently the converse of "All A is B" is "All not B is not A," and of "Some A is not B," "Some not B is not not A." It is simpler, however, to convert A into E and O into I, ("No not B is A;" "Some not B is A,") as is done by Wallis and Abp. Whately; and before Boethius by Apuleius and Capella, who notice the conversion, but do not give it a name. The principle of this conversion may be found in Aristotle, Top. ii. 8. 1. though he does not employ it for logical purposes.

\* *Sit vera E*. This is the proof given by Theophrastus and Eudemus. (Alexander, Scholia, p. 148. b. 29.) Aristotle proves it by the method called *ἐκθεσις*, i. e. by the *exhibition* of an individual instance, (*ἐκθέσις exponere sensui*; whence a syllogism with singular premises is called *Syllogismus expositivus*.) Thus, No A is B, therefore No B is A, for if not, Some *individual* B, say C, is A. Then C is both A and B, and therefore it will not be true that No A is B; which was the original proposition. Aristotle does not assume the conversion of I to prove that of E, which would be arguing in a circle. For a fuller account, see Hamilton on Reid, p. 696.

Alexander himself offers a third proof by syllogism in the first figure. No A is B, therefore No B is A; for suppose "Some B is A," and "No A is B," ∴ Some B is not B.

Having proved the conversion of E, those of A and I will follow from it. "All A is B, therefore Some B is A;" or else No B is A, and therefore (by conversion) No A is B; whereas we assumed All A is B. And again, Some A is B, therefore Some B is A; or else No B is A, and therefore No A is B.

For these proofs, the only assumption necessary is the principle of contradiction.

tradictoria E: Ergo et contradictoriæ simpliciter conversa: Ergo quæ conversæ contradicit, (i. e. expositæ simpliciter conversa,) est vera. 3. Sit vera E. Ergo et ejus simpliciter conversa: Ergo et conversæ subalternata: quæ est expositæ conversa per accidens. 4. Sit vera A; Ergo et ejus subalternata: Ergo et subalternatæ simpliciter conversa: quæ est expositæ per Accidens<sup>d</sup>.

Ceteræ Conversiones<sup>e</sup>, cum sint partim ambiguae,

<sup>d</sup> In Conversion, as in Opposition, Singular Propositions have been neglected by Aldrich. Concerning these, the following extract from Wallis may assist the learner. "Propositio *Singularis*, (sive *Affirmativa* sive *Negativa*), cum semper *Universalis* sit, observat leges aliarum *Universalium*. Puta, *Virgilius est Poeta*; ergo *Aliquis Poeta est Virgilius*. Item, *Virgilius non est Græcus*; ergo *Nullus Græcorum est Virgilius*. Atque in aliis similiter.

Si autem *Convertendæ* propositionis *Prædicatum* sit *Individuum*, (quodcunque habuerit *Subjectum*), *Convertentis Subjectum* (quippe quod fuerat *Convertendæ Prædicatum*) *Individuum* erit; propterea et *Propositio Convertens* (siqua sit) necessario erit *Singularis*, adeoque *Universalis*." See also Reid's Works, ed. Hamilton, p. 697.

<sup>e</sup> *Ceteræ conversiones*. For the benefit of the curious, we quote the following: "Tres igitur sunt famosæ apud Logicos conversionis species. Dico famosæ, quoniam nonnulli moderni invenerunt duas alias conversionis species, quarum una est conversio propositionum nullius quantitatis, ut exclusivæ et reduplicativæ. Nam sic convertitur exclusiva; tantum homo est rationalis, omne rationale est homo: reduplicativa autem sic convertitur; homo in quantum homo est rationalis, rationale est homo in quantum homo. Item propositionum modalium, ut hominem esse album est possibile, ergo possibile est hominem esse album. Item alii imaginati sunt duas alias species. Prima est quando mutatur qualitas et

partim falsæ, partim ad præcepta Syllogismorum inutiles, in Logica negliguntur<sup>1</sup>.

non quantitas, ut hic; omnis homo est animal, omne animal non est homo. Secunda est quando mutatur quantitas et qualitas, ut hic; omnis homo est animal, aliquod animal non est homo. Verum quia hujusmodi conversiones non sunt in usu, nec nobis deserviunt pro reductione syllogismorum, ideo immorabimur circa primam et secundam speciem, tangentes breviter de tertia, omnibus aliis relictis." Javellus, de Propositione, cap. ii.

<sup>1</sup> Is the converse an inference from the *exposita*, or, as Whately says, the same Judgment in another form? This was an early point of dispute among the Schoolmen. See Albert. in Anal. Pr. Tract. i. cap. 8. Aristotle clearly considers it an *inference*; otherwise it would be absurd to prove it. Reid, in his Account of Aristotle's Logic, defines it as an inference, and the definition is accepted by his learned Editor. Kant, too, regards both conversion and opposition as *syllogisms of the understanding*, (*Verstandesschlüsse*.) As regards conversion *per accidens*, the *exposita* is clearly not identical with the converse; as it cannot be substituted for it, but may be false, while the converse is true.

## CAP. III.

*De Syllogismo Categorico puro.*

§. 1. TERTIA pars Logicæ agit de *Argumento*<sup>a</sup> sive *Syllogismo*, quod est signum tertiæ operationis intellectûs: nempe *Discursus*, vel *Ratiocinium* Propositionibus expressum.

Quare, cum *Discursus*<sup>b</sup> sit progressus mentis ab uno judicio ad aliud, perspicuum est in eo requiri  
1. Aliquid unde discursus ordiatur. 2. Aliud quo perveniat. 3. Ea sic ab invicem pendere, ut unum ex alio, et aliûs vi innotescat; secus enim, unum post aliud cognoscere, est tantum sæpe judicare.

Anal. Post.  
I. 1. 1.

Jam, ex quo aliud cognoscendum est, ipsum certe præcognosci debet; et proinde quasi sine discursu notum, *antecedere, poni, præmitti*: et ex eo reliquum *concludi, colligi, inferri* et *sequi* dicitur. Est autem duplex *consequentia*:

1. *Materialis*; quando ex Antecedente Consequens infertur, sola vi Terminorum<sup>c</sup>, quæ est

<sup>a</sup> *Argument* is not properly synonymous with syllogism, but with the middle term only. See Ed. Rev. No. 115. p. 218.

<sup>b</sup> See before, p. 4. note g.

<sup>c</sup> i. e. because our knowledge of facts enables us to supply deficient premises. This, however, we do not do *as Logicians*. See further, Appendix, note C. On the *matter* and *form* of syllogisms, see Crakanthorpe, lib. 3. cap. 13. "Atque ut in Propositione Categorica, termini duo nempe Subjectum et Prædicatum sunt *Materia*, Copula autem quæ est verbum substantivum, aut aliqua ejus persona, est *Forma*: et ut in Hypo-thetica Propositione duæ Propositiones sunt *Materia*, Con-junctio autem Conditionalis, Copulativa aut Disjunctiva, quæ

*Argumenti materia*: ut, *Homo est animal*. Ergo *est vivens*.

2. *Formalis*; quando infertur propter ipsum colligendi modum, quæ est *argumenti forma*; ut, *B est A. C est B*. Ergo *C est A*. Mutatis terminis et servata eorum dispositione, Materialis plerumque fallit, Formalis semper obtinet: et proinde hæc solum in Logica spectatur, illa, tanquam mutabilis et lubrica, negligitur.

Hisce intellectis, opinor satis constare quo sensu <sup>Anal. Pr. I. 1. 6.</sup> definiatur *Syllogismus*; <sup>Top. I. 1. 2.</sup> *Oratio in qua positis quibusdam atque concessis, necesse est aliud evenire præter et propter ea quæ posita sunt atque concessa*.

§. 2. MULTÆ sunt ejus species; sed una tantum præsentis instituti; nempe *Categoricus simplex*, i. e. qui constat tribus Propositionibus de inesse°.

copulat istas Propositiones, est illius quasi *Forma*: Ita plane in Argumentatione Præmissæ et Conclusio sunt illius *Materia*; Illativa autem nota, quæ eas in arguendo copulat, est quasi *Forma*: quare, si hæc desit, Argumentatio nulla esse dicive potest." This approaches very nearly to Kant's distinction. Cf. Logik, §. 24, 25, 28, 59.

<sup>a</sup> Arist. Anal. Pr. i. 1. 6. Συλλογισμὸς δὲ ἐστὶ λόγος ἐν ᾧ τεθέντων τῶν ἑτερόν τι τῶν κειμένων ἐξ ἀνάγκης συμβαίνει τῷ ταῦτα εἶναι. See also, Top. i. 1. 2. The latter definition is translated by Aulus Gellius, xv. 26. "Oratio in quâ, consensus quibusdam et concessis, aliud quid, quam quæ concessa sunt, per ea, quæ concessa sunt, necessario conficitur." The word *concessis* is too limited; being strictly true only of the topical syllogism. Cf. Trendelenburg, Elem. §. 21. On the charge of *petitio principii*, sometimes brought against the syllogism, see Appendix, note D.

° i. e. pure Categoricals.



Anal. Pr.  
I. 4. 15.  
I. 26. 1.  
Anal. Post.  
II. 1. 1.

E quibus duæ priores sunt Antecedens, tertia Consequens; quæ extra Syllogismum spectata (scil. quamdiu hæret in incerto) *Problema*<sup>1</sup>, et *Quæstio*<sup>2</sup> dicitur; in Syllogismo autem (nempe post fidem factam) *Conclusio*. Quæstionis duo sunt extrema, Subjectum et Prædicatum; quorum de Convenientia vel Dissidio inquiritur, ope termini alicujus tertii; idque propter Canones sequentes<sup>3</sup>, in quibus vis omnis Syllogistica fundatur.

1. Quæ conveniunt in uno aliquo eodemque tertio, ea conveniunt inter se.

<sup>1</sup> Τὸ γὰρ αὐτὰ γένει πρόβλημα καὶ λήμμα καὶ ὁμολόγημα καὶ συμπέρασμα καὶ ἀξιῶμα· πάντα γὰρ προτάσεις τῇ σχέσει τὴν διαφορὰν ἔχοντα· προτιθέμενον γὰρ εἰς δεῖξιν ὡς μὴ γνώριμον πρόβλημα καλεῖται, λαμβανόμενον δὲ εἰς ἄλλον δεῖξιν λήμμα καὶ ὁμολόγημα· ἀξιῶμα δὲ ὅταν ἀληθὲς ᾖ καὶ ἐξ ἑαυτοῦ γνώριμον, δεδειγμένον δὲ συμπέρασμα. Alexander, Schol. p. 150, b. 40. This accords with the sense of πρόβλημα in Anal. Pr. i. 4. 15. i. 26. 1. The dialectical use of the term in disputation is not very different. Cf. Topics, i. 4. 1, 3. i. 11. 1. Schol. p. 256, a. 14.

<sup>2</sup> *Quæstio*; τὸ ζητούμενον, Anal. Post. ii. 1. 1. which term, however, has a more extensive application than is here assigned; for two of the *Quæstiones scibiles*, *an sit* and *quid sit*, cannot in all cases be determined syllogistically. See An. Post. ii. 3. and Appendix, note B.

<sup>3</sup> Of these canons, the first is supposed to include all affirmative, the second, all negative syllogisms. But they are in reality a clumsy attempt to reduce all the figures of syllogism to one principle by the aid of mathematical axioms. But the axioms properly relate to equal magnitudes; whereas in the first figure of syllogism the major term is more extensive than the middle, the minor less so. Hence that unhappy word *conveniunt* has to express, at one and the same time, the relation of a greater to a less, and of a less to a greater,—of a predicate to a subject, and of a subject to a predicate.

2. Quorum unum convenit, alterum differt uni et eidem tertio, ea differunt inter se.

3. Quæ non conveniunt in uno aliquo eodemque tertio, ea non conveniunt inter se.

Sunto enim A et C, nec assignari possit ejusmodi tertium, Ergo nihil habent commune; Ergo non conveniunt inter se.

4. Quorum neutri inest quod non sit in alio, ea non differunt inter se<sup>†</sup>.

5. Quæ non probantur convenire in uno aliquo eodemque tertio, ea non probantur convenire inter se. Dubitari enim potest utrum detur ejusmodi tertium, et dubitatio ista non tollitur.

6. De quibus non probatur, convenire unum eidem alicui tertio cui alterum differt, ea non probantur differre inter se. Dubitari enim potest, utrum detur ejusmodi tertium, h. e. utrum alterutri insit quod non est in reliquo; et dubitatio ista non tollitur<sup>‡</sup>.

<sup>†</sup> The third and fourth canons relate to conditions under which no syllogism *can* exist. "Two things, which have not a point in common, are totally distinct." "Two things, which have not a point of difference, are undistinguishable." But if there is no such point, there is no middle term, and therefore no syllogism.

<sup>‡</sup> The fifth and sixth canons relate to conditions under which no syllogism *does* exist. "If no point has been assigned, whether of agreement or difference." But if so, there is no syllogism.

Hence these four cannot be called canons of syllogism. They may be useful, however, for examining the illogical positions of an opponent.

§. 3. Ex sex hisce Principiis Syllogismi structura sic deducitur.

Anal. Pr. I.  
I. 25. 1.

1. In omni Syllogismo sunt tres, et tres tantum, termini. Nam Syllogismus<sup>1</sup> omnis probat aliquam conclusionem: Et in illâ sunt duo tantum extrema: Et illa neque convenire, neque differre probatur, sine uno, unoque tantum, tertio.

Anal. Pr. I.  
4. 8. I. 5. 1.  
I. 6. 1. I. 5. 7.

Jam, Prædicatum Quæstionis dici solet *majus extremum*<sup>m</sup>, *major terminus*; Subjectum Quæstionis,

Anal. Pr. I.  
32. 8. I. 4. 3.  
I. 5. 1. I. 6. 1.

*minor*; Terminus vero tertius, cui quæstionis extrema comparantur, Aristoteli *Argumentum*, vulgo *Medium*<sup>n</sup>: Nam Prædicatum Quæstionis plerumque amplius est Medio; hoc minori.

Anal. Pr. I.  
23. 5. I. 25.  
8. I. 32. 8.

2. In omni Syllogismo sunt tres, et tres tantum, propositiones. Duæ præmissæ°, in quibus Medium

<sup>1</sup> Aristotle adopts an inverse method; first examining the structure, and stating the laws of each separate figure of syllogism, in An. Pr. i. ch. 4, 5, 6. and afterwards enumerating, as the result of the examination, the general laws applicable to all, in An. Pr. i. 23 sqq. On the respective merits of the two methods, see Pacius on An. Pr. i. 4. Reid, ed. Hamilton, p. 700.

<sup>m</sup> *Majus extremum*; τὸ μείζον ἄκρον, (also τὸ πρότερον, An. Pr. i. 31, 2.) *minus*; τὸ ἐλάττω, (also τὸ ἑσχατον, An. Pr. ii. 8. 3.) *Terminus*, ὅρος, for the various meanings of which, see Waitz, vol. i. p. 370. *Major term*; μείζων ὅρος: *minor*; ἐλάττω ὅρος, An. Pr. i. 5. 7. The definitions of the major and minor terms given in the text are condemned by Pacius, (on An. Pr. i. 7.) as inapplicable to the indirect moods. Aristotle gives a separate definition of the three terms in each figure. But the indirect moods may, without loss, be dispensed with.

<sup>n</sup> More correctly, "Aristoteli *medium*, Ciceroni aliisque *argumentum*." See Ed. Rev. No. 115. p. 218.

° *Major premise*; ἡ πρὸς τῷ μείζονι ἄκρῳ πρότασις. *Minor premise*; ἡ πρὸς τῷ ἐλάττωι ἄκρῳ πρότασις. *Conclusion*; συμπε-

cum extremis seorsim conferatur, (nempe *Major*, Anal. Pr. II. 10. 6. in qua cum majori; *Minor*, in qua cum minori;) una *Conclusio*, in qua extrema invicem committantur.

N.B. 1. Quod Major dici solet simpliciter *Propositio*; Minor, *Assumptio*<sup>p</sup>. 2. Quod Medium non ingreditur conclusionem, alias idem per idem probaretur: adeoque non essent tres termini.

3. Ancipiti medio nihil conficitur. Neque enim Anal. Pr. I. 32. 10. Soph. Elench. 4. 1. affertur in hoc casu unum aliquod idemque tertium vel in quo extrema conveniant, vel cui unum conveniat, alterum differat.

4. Medium non distributum<sup>q</sup> est anceps. Esto Anal. Pr. I. 24. 1.

*πασμα*, which also signifies *minor term*, Anal. Pr. ii. 14. The *premise* is not, properly speaking, called *ὑπόθεσις* by Aristotle. In such expressions as *καθόλου ὅντων τῶν ὄντων*, (Anal. Pr. i. 5. 2.) there is an ellipsis of *πρὸς τὸν ἕτερον*, and the phrase means strictly, that one *term* is predicated *universally* of the other, i. e. of the whole of the other.

<sup>p</sup> As by Cicero, de Invent. i. 37. Fortunatianus, Rhet. lib. ii. Cassiodorus, de Art. ac Disc. ch. 2. Boethius, de Syll. Hyp. p. 614. The terms are of Rhetorical origin. Quintilian calls the major premise, *Intentio*. Inst. Orat. v. 14. The conclusion is called *complexio*; a term also applied by Cicero to the Dilemma; de Inv. i. 29.

<sup>q</sup> *Distribution* is not an Aristotelian term. It forms part of what the Schoolmen call *parva logicalia*; a kind of appendix to analyses of the Organon; containing matters, some evolved from, though not distinctly treated of, by Aristotle, others complete innovations. The greater part of these first appear in Petrus Hispanus. See *Summule Logicales*, Tr. 7.

The syllogistic rules concerning distribution are of course implied in Aristotle's account of each figure, though not enunciated separately, as common to all. Thus, to say that the major premise in fig. 1. must be universal, or one

enim B terminus communis in  $b$  et  $\beta$  divisibilis; Ergo  $b$  et  $\beta$  sunt opposita: et tamen vere dicitur Aliquod B est  $b$  et Aliquod B est  $\beta$ . Quare aliquod B est Medium anceps.

5. Quare Medium in præmissis semel ad minimum distribui debet; sufficit tamen, si vel semel distribuatur. Nam 1. ad probandum A est C, conveniat C alicui B, et A omni; Ergo eidem alicui B: Ergo affertur unum aliquod idemque tertium &c. 2. ad probandum A non est C, conveniat C alicui B, et A differat omni; Ergo eidem alicui B: Ergo affertur &c.

6. Processus ab extremo non distributo in præmissis, ad idem distributum in conclusione, vitiosus est. Nam ex *aliquo* non sequitur *omne*. Esto enim verum quod aliquod; Ergo potest esse verum quod aliquod non; (nam Subcontrariæ possunt esse simul veræ:) Ergo de aliquo potest affirmari quod non de omni. Esto rursus verum quod aliquod non: Ergo potest esse verum quod aliquod: Ergo de aliquo potest negari quod non de omni.

Anal. Pr.  
I. 24. 1.

7. Præmissis negantibus nihil probatur: Affer-tur enim tertium cui utrumque extremum differt; non autem cui vel utrumque conveniat, vel unum conveniat, alterum differat.

8. Si præmissarum altera sit negativa, erit etiam Conclusio. Nam præmissarum reliqua est affirma-

premise in fig. 2. negative, is equivalent to a rule for distributing the middle term. The particular conclusion in fig. 3. in like manner forbids an illicit process of the minor term.

tiva: Ergo extremorum unum differt medio, alterum convenit: Ergo extrema differunt inter se: Ergo conclusio est negativa.

9. Contra, si Conclusio sit negativa, erit etiam altera præmissarum. Nam extrema differunt inter se: Ergo eorum unum convenit medio, alterum differt: Ergo præmissarum altera affirmat, reliqua negat.

Anal. Pr.  
I. 24. 4.

10. Præmissis particularibus nihil probatur. Nam præmissarum altera affirmat: Ergo in illa medium non distribuitur: Ergo distribui debet in reliqua: Ergo illa est negativa in qua medium prædicatur: Ergo conclusio negativa: Ergo prædicatum ejus distribuitur, quod in præmissis non est distributum; Fuit enim vel affirmativæ terminus alter, vel subjectum negativæ; horum vero nullus distribuitur.

Anal. Pr.  
I. 24. 1.

11. Si præmissarum altera particularis sit, conclusio quoque particularis est. Sit enim 1. Præmissarum altera particularis affirmativa; Ergo in illa nec extremum suum nec medium distribuitur: Ergo medium distribuitur in reliqua, quæ etiam Universalis est, sitque 1. Affirmativa: Ergo in illa medium subjicitur, et extremum medio attributum non distribuitur: Ergo neutrum extremorum distribuitur in præmissis: Ergo neutrum in conclusione: Ergo conclusio particularis affirmativa est. Sit 2. Negativa: Ergo conclusio negativa: sed debet habere extremum non distributum: Ergo particularis negativa est.

Anal. Pr.  
I. 24. 3.

Sit 2. Præmissarum altera particularis negativa: Ergo Reliqua Universalis affirmativa: Ergo in præ-

missis duo tantum termini distribuuntur : Ergo Conclusio habet extremum non distributum : Ergo cum negativa sit, erit etiam particularis.

An. Pr. I.  
24. 3.

12. Quod si Conclusio<sup>\*</sup> particularis sit, non necesse est præmissarum alteram particularem esse. Fieri enim potest, ut instituto meo sufficiat subalternata, quando subalternans potuit inferri. Et cum illæ sint simul veræ, liberum est utramvis inferre. Quanquam stricte loquendo, Argumentatio non est accurata ; nam Subalternatæ veritas non immediate deducitur ex præmissis, sed ex subalternante.

Syllogismi generales regulas complectitur hoc Tetrastichon<sup>\*</sup>.

Distribuas medium ; nec quartus terminus adsit.

Utraque nec præmissa negans, nec particularis.

Sectetur partem Conclusio deteriorem.

Et non distribuat, nisi cum præmissa, negetve.

§. 4. SUPEREST per hasce regulas inquirere, quot

\* This rule is given by Aristotle, not with reference to the subaltern moods, but to the third figure, in which two universal premises only warrant a particular conclusion. An inverse rule of inference holds with regard to truth and falsehood : two true premises necessitate a true conclusion ; but the truth of the conclusion does not guarantee that of the premises. Cf. An. Pr. ii. 2. 1.

\* The earliest form of this mnemonic is that given by Petrus Hispanus :

Partibus ex puris sequitur nil, sive negatis.

Si qua præit partis, sequitur conclusio partis.

Si qua negata præit, conclusio sitque negata.

Lex generalis erit, medium concludere nescit.

modis componi possunt tres Propositiones de inesse, ut Syllogismum conficiant. Qua in inquisitione duo spectanda sunt.

1. *Modus*<sup>t</sup>, sive legitima determinatio Propositionum secundum Quantitatem et Qualitatem.

2. *Figura*, sive legitima dispositio Medii cum partibus Quæstionis.

Modi sunt in universum 64. Nam, ut supra ostensum est, ad Syllogismum faciunt Propositiones tantum quatuor A. E. I. O. Quare concipi potest Quadruplex tantum Major in Syllogismo; cuilibet vero Majori quadruplex tantum Minor adjungi; unde 16. paria præmissarum: et singulis præmissis quadruplex tantum Conclusio; unde 64. Modi Syllogismorum.

<sup>t</sup> *Mood* (*τρόπος*) is not in this sense an Aristotelian expression, (unless possibly in An. Pr. i. 28. 14?); but it is found in his Greek commentators. See Alexander, Schol. p. 150, b. 3. Aristotle in the same sense employs *πρόσις*, An. Pr. i. 26. 1. He does not adopt an arithmetical calculation of possible moods distinct from considerations of figure, but shews, in each figure separately, what combinations of propositions are admissible, and what not. It may be observed, that the earliest scholastic Logicians do not consider Mood as composed of three propositions, but of the two premisses only. Thus Peter of Spain (after Psellus) defines “ordinatio *duarum* propositionum in debita qualitate et quantitate;” so Aquinas, in Opusc. xlviii. de Syll. ch. 4. In this case the number of possible moods is only sixteen.

This computation is given by Apuleius, who distinguishes between *modi* or *moduli*, and *conjugationes*; using the former term for the combinations of three propositions, the latter for those of two.



AAA. AAE. AAI. AAO. \*AEA. AEE. AEI.  
AEO. \*AIA. AIE. AII. AIO. \*AOA. AOE. AOI.  
AOO.

EAA. EAE. EAI. EAO. \*EEA. EEE. EEI.  
EEO. \*EIA. EIE. EII. EIO. \*EOA. EOE. EOI.  
EOO.

IAA. IAE. IAI. IAO. \*IEA. IEE. IEI. IEO.  
\*IIA. IIE. III. IIO. \*IOA. IOE. IOI. IOO.

OAA. OAE. OAI. OAO. \*OEA. OEE. OEI.  
OEO. \*OIA. OIE. OII. OIO. \*OOA. OOE. OOI.  
OOO.

Ex his excluduntur sedecim per Regulam 7. propter præmissas negantes, viz. EEA. EEE. EEI. EEO. \*EOA. EOE. EOI. EOO. \*OEA. OEE. OEI. OEO. \*OOA. OOE. OOI. OOO. Duodecim per Reg. 10. propter præmissas particulares, viz. IIA. IIE. III. IIO. \*IOA. IOE. IOI. IOO. \*OIA. OIE. OII. OIO. Duodecim per Reg. 8. quia præmissarum altera negat, sed non Conclusio, viz. AEA. AEI. AOA. AOI. \*EAA. EAI. EIA. EII. \*IEA. IEI. \*OAA. OAI. Octo per Reg. 11. quia præmissarum altera particularis est, sed non Conclusio, viz. AIA. AIE. AOE. \*EIE. \*IAA. IAE. \*IEE. \*OAE. Denique quatuor per Reg. 9. quia Conclusio negativa est sed neutra præmissarum, viz. AAE. AAO. AIO. \*IAO.

Excluduntur igitur in universum Modi  $52 = 16 + 12 + 12 + 8 + 4$ . e quibus multi contra plures regulas peccant, quamvis una tantum notetur.

Supersunt  $(64 - 52 = ) 12$  Modi ad Syllogismum

utiles, viz. AAA. AAI. AEE. AEO. AII. AOO.  
\*EAE. EAO. EIO. \*IAI. IEO<sup>u</sup>. \*OAO.

§. 5. FIGURÆ\* Syllogismorum sunt 4. Nam

<sup>u</sup> IEO has been condemned ever since the days of Apuleius, as far as the second and third figures are concerned. It was sometimes allowed in the first, as the indirect mood Frisesmo, but should not have been retained by Aldrich, who does not recognise the indirect moods. With a direct conclusion, it manifestly produces an illicit process of the major term.

\* *Figuræ, σχήματα*, An. Pr. i. 4. 15. "Figuras syllogismorum, quæ dicuntur (Apuleius 'formulas' vocat), ab Aristotele appellatas esse Jul. Pacius putat, quia figuris geometricis adscriptis syllogismi ab eo illustrati sint. Equidem hanc vocem non tam a geometricis petitam quam de ipso ordine terminorum accipiendam putaverim, quem σχῆμα appellari licebit, etiam si de geometricis figuris non cogitetur: sic enim supra commemoravimus τὰ σχήματα τῆς κατηγορίας (Metaph. v. 2. 1.), τὸ σχῆμα τῆς ἰδέας (Metaph. vi. 3. 2.), τὰ σχήματα τῆς λέξεως (Poet. 19. 7.), σχῆμά τι δημοκρατίας (Polit. vi. 4. 5.)." Waitz, vol. i. p. 384.

Aristotle acknowledges only three figures; looking rather to the extension of the middle term, as compared with the other two, than to its position in the two premises. See Trendelenburg, Elem. §. 28. Waitz on Anal. Pr. i. 23. 7. The invention of the fourth figure is attributed by Averroes (on Anal. Pr. i. 8.) to Galen. The latter may possibly have first called the five moods by that name, but they were known at a much earlier period as indirect moods of the first figure. An indirect mood is one in which we do not infer the immediate conclusion, but its converse. Consequently, the predicate of the conclusion, which in a direct mood is the *major* term, is in an indirect one the *minor*. The five indirect moods of the first figure were called, Baralip, Celantes, Dabitis, Fapesmo, Frisesmo. The three first are clearly, Barbara, Celarent, Darii, with the conclusions converted. With regard to the two last, the process is a little more intricate. They have

Medium, quod cum utroque extremo comparatur, vel 1. subjicitur majori et tribuitur minori, et fit *figura prima*; vel 2. tribuitur utrique, et fit *secunda*; vel 3. subjicitur utrique, et fit *tertia*; vel 4. tribuitur majori et subjicitur minori, et fit *quarta*. Quæ omnia sequenti Schemate declarantur.

*Dispositio trium terminorum, scilicet majoris*

*A. medii B. minoris C. in Figura.*

1.	2.	3.	4.
B. A.	A. B.	B. A.	A. B.
C. B.	C. B.	B. C.	B. C.
C. A.	C. A.	C. A.	C. A.

negative minor premises, and thus offend against a special rule of the first figure; but this is checked by a counterbalancing transgression. For by simply converting O, we alter the distribution of the terms, so as to avoid an illicit process. Thus,

All B is A (fap)	Some B is A (fris)
No C is B (esm)	No C is B (esm)
Therefore Some A is not C (o)	Therefore Some A is not C (o)
Where to infer "Some C is not A," would involve an illicit process of the major term.	Where to infer "Some C is not A," would involve an illicit process of the major term.

The invention of these indirect moods is attributed to Theophrastus; not, however, on the authority of Apuleius, as asserted by M. St. Hilaire, but on that of Alexander, Schol. p. 153, a. 47. But they are clearly recognised by Aristotle; the last two in Anal. Pr. i. 7. 1. the first three in Anal. Pr. ii. 1. 2. The passage in Apuleius does not refer to the *indirect*, but to the *indefinite*, syllogism.

Quare quælibet Figura excludit adhuc sex modos<sup>7</sup>. Nempe

1. Propter Medium non distributum. Prima duos IAI. OAO. Secunda quatuor AAA. AAI. AII. IAI. Quarta duos AII. AOO.

2. Propter processum majoris illicitum. Prima quatuor AEE. AEO. AOO. EIO. Secunda duos IEO. OAO. Tertia quatuor AEE. AEO. AOO. IEO. Quarta duos IEO. OAO.

3. Propter processum minoris illicitum. Tertia duos AAA. EAE. Quarta duos AAA. EAE.

Supersunt Modi certo et necessario concludentes 24. sex in qualibet Figura.

<sup>7</sup> Certain moods, not excluded by the general rules of syllogism, are rejected in some one figure, by what are called the special rules of that figure. These special rules are given as follows by Peter of Spain.

Fig. 1. { 1. Minore existente negativa nihil sequitur.  
2. Majore existente particulari nihil sequitur.

Fig. 2. { 1. Majore existente particulari nihil sequitur.  
2. Ex puris affirmativis nihil sequitur.  
3. In secunda figura semper concluditur negative.

Fig. 3. { 1. Minore existente negativa nihil sequitur.  
2. In tertia figura conclusio debet esse particularis.

These rules are all to be found in An. Pr. i. ch. 4, 5, 6. Of the fourth figure rules have been made, that neither premise may be O, nor the conclusion A. But these are insufficient, as not excluding the moods EAE and AII, both of which are faulty in the fourth figure.

## I.

<i>bAr</i>	Omne	B	est	A
<i>bA</i>	Omne	C	est	B: <i>Ergo</i>
<i>rA</i>	Omne	C	est	A.

<i>cE</i>	Nullum	B	est	A
<i>lA</i>	Omne	C	est	B: <i>Ergo</i>
<i>rEnt</i>	Nullum	C	est	A.

<i>dA</i>	Omne	B	est	A
<i>rI</i>	Aliquod	C	est	B: <i>Ergo</i>
I	Aliquod	C	est	A.

<i>fE</i>	Nullum	B	est	A
<i>rI</i>	Aliquod	C	est	B: <i>Ergo</i>
O	Aliquod	C	non est	A.

A	Omne	B	est	A
A	Omne	C	est	B: <i>Ergo</i>
I	Aliquod	C	est	A.

E	Nullum	B	est	A
A	Omne	C	est	B: <i>Ergo</i>
O	Aliquod	C	non est	A.

## II.

<i>cEs</i>	Nullum	A	est	B
A	Omne	C	est	B: <i>Ergo</i>
<i>rE</i>	Nullum	C	est	A.

*cAm* Omne A est B  
*Es* Nullum C est B: *Ergo*  
*trEs* Nullum C est A.

*fEs* Nullum A est B  
*tI* Aliquod C est B: *Ergo*  
*nO* Aliquod C non est A.

*bAr* Omne A est B  
*Ok* Aliquod C non est B: *Ergo*  
*O* Aliquod C non est A.

*E* Nullum A est B  
*A* Omne C est B: *Ergo*  
*O* Aliquod C non est A.

*A* Omne A est B  
*E* Nullum C est B: *Ergo*  
*O* Aliquod C non est A.

### III.

*dAr* Omne B est A  
*Ap* Omne B est C: *Ergo*  
*tI* Aliquod C est A.

*fEl* Nullum B est A  
*Ap* Omne B est C: *Ergo*  
*tOn* Aliquod C non est A.

*dIs* Aliquod B est A  
*Am* Omne B est C: *Ergo*  
*Is* Aliquod C est A.

*bOk* Aliquod B non est A  
*Ar* Omne B est C: *Ergo*  
*dO* Aliquod C non est A.

*dAt* Omne B est A  
*Is* Aliquod B est C: *Ergo*  
*I* Aliquod C est A.

*fEr* Nullum B est A  
*Is* Aliquod B est C: *Ergo*  
*On* Aliquod C non est A.

## IV.

*brAm* Omne A est B  
*An* Omne B est C: *Ergo*  
*tIp* Aliquod C est A.

*cAm* Omne A est B  
*En* Nullum B est C: *Ergo*  
*Es* Nullum C est A.

*dIm* Aliquod A est B  
*Ar* Omne B est C: *Ergo*  
*Is* Aliquod C est A.

*fEs* Nullum A est B  
*Ap* Omne B est C: *Ergo*  
*O* Aliquod C non est A.

*frEs* Nullum A est B  
*Is* Aliquod B est C: *Ergo*  
*On* Aliquod C non est A.

A Omne A est B  
E Nullum B est C: *Ergo*  
O Aliquod C non est A.

*Barbara*\*, *Celarent*, *Darii*, *Ferioque*, prioris :

\* *Barbara*, *Celarent*, &c. This mnemonic first appears in the *Summulae Logicales* of Peter of Spain, (see on p. 41.) But in his version the fourth figure is omitted, and its moods given as indirect moods of fig. 1. This earliest edition of these celebrated lines runs thus :

Barbara, Celarent, Darii, Ferio, Baralipet,  
Celantes, Dabitis, Fapesmo, Frisesmo, deinde  
Cesare, Camestres, Festino, Baroco, Darapti,  
Felapton, Disamis, Datisi, Bocardo, Ferison.

Several other versions are found in later writers. A Greek mnemonic of the same kind is inserted in editions of the *Organon* preceding that of Pacius. (See Buhle's *Aristotle*, vol. ii. p. 628.) It runs thus :

Fig. 1. γράμματα—ἔγραψε—γραφίδι—τεχνικός.

Fig. 2. ἔγραψε—κάτεχε—μέτριον—ἄχολον.

Fig. 3. ἀπασι—σθεναρός—ἰσάκις—φέριστος—ἄσπιδι—δύμαλος.

This mnemonic is attributed by M. St. Hilaire to Nicephorus Blemmidas.



*Cesare, Camestres, Festino, Baroko*, secundæ :  
*Tertia, Darapti, Disamis, Datisi, Felapton,*  
*Bokardo, Ferison*, habet : Quarta insuper addit  
*Bramantip, Camenes, Dimaris, Fesapo, Fresison* :  
 Quinque *Subalterni*, totidem *Generalibus* orti,  
 Nomen habent nullum, nec, si bene colligis, usum.

§. 6. ATQUE omnes quidem 24. eatenus concludere, quod in iis convenientia vel dissidium extremorum certo atque necessario colligatur, ex Principio primo et secundo abunde constat.

Quod aliter demonstrat Aristoteles ad hunc modum.

An. Pr. I.  
 1. 8.

Statuit primo Theorema, quod Scholastici vocant *Dictum de Omni et Nullo*\*, scil. "Quod prædicatur

\* Λέγουμεν δὲ τὸ κατὰ παντὸς κατηγορεῖσθαι, ὅταν μὴδὲν ἢ λαβεῖν τῶν τοῦ ὑποκειμένου, καθ' οὗ θάτερον οὐ λεχθήσεται· καὶ τὸ κατὰ μηδενὸς ὡσαύτως, An. Pr. i. 1. 8. The same principle is implied in the first antipredicamental rule, Categ. 3. 1. ὅσα κατὰ τοῦ κατηγορουμένου λέγεται πάντα καὶ κατὰ τοῦ ὑποκειμένου ῥηθήσεται. Indeed, Aldrich's version is more nearly a translation of the latter than of the *Dictum* properly so called. Cf. Petr. Hisp. Tract. iv. "Dici de omni est, quando nihil est sumere sub subjecto, de quo non dicatur prædicatum. Dici de nullo est, quando nihil est sumere sub subjecto a quo non removeatur prædicatum."

The *Dictum de Omni et Nullo* is most improperly called a *Theorem*. This term in Aristotle is synonymous with ζήτημα, and means a proposition, the truth of which is to be inquired into, not one laid down as an axiom. See Topics, i. 11. 1. Alexander, Scholia, p. 259, a. 38.

The *dictum* is directly applicable only to the first figure, which is considered by Aristotle as the type of all syllogisms, and to which the others have to be reduced, as a necessary

“Universaliter de alio, (i. e. de termino distributo,) “sive affirmative, sive negative, prædicatur similiter “de omnibus sub eo contentis.”

Admisso hoc Theoremate (quod axioma sponte perspicuum est) constat una, modos quatuor priores in prima certo atque necessario concludere. Nam eorum major ostendit majus extremum prædicari de medio distributo; et minor, minus extremum sub medio contineri.

Quare, Modi quatuor prædicti nihilo penitus indigent quo necessitas conclusionis appareat, præter ea quæ in præmissis posita sunt; et proinde

test of their validity. In this he is followed by Kant, *Logik*, §. 69. We may adopt this method; or we may enunciate distinct axioms for the second and third figures. This has been done by Lambert, *Neues Organon*, part i. ch. 4. §. 232. but he is far from happy in his enunciation of the dicta. We may state them as follows:

Principle of second figure. *Dictum de Diverso*.

If a certain attribute can be predicated (affirmatively or negatively) of every member of a class, any subject, of which it cannot be so predicated, does not belong to the class.

Principles of third figure. I. *Dictum de Exemplo*.

If a certain attribute can be affirmed of any portion of the members of a class, it is not incompatible with the distinctive attributes of that class.

II. *Dictum de Excepto*. If a certain attribute can be denied of any portion of the members of a class, it is not inseparable from the distinctive attributes of that class.

The natural use of the second figure, according to Lambert, is for the discovery and proof of the differences of things: that of the third, for the discovery and proof of examples and exceptions.

Concerning Lambert's imaginary principle of the fourth figure, see p. 80, note m.

An. Pr. I.  
1. 7.

quatuor illi sunt præ cæteris evidentes. Nam cæteri omnes aliquo vel aliquibus egent, quæ, utcunque per præmissas necessaria, in Syllogismo tamen non exprimuntur. Quare illos Aristoteles *perfectos*<sup>b</sup>, hos *imperfectos* dicit; Scholastici *directos*, et *indirectos* vocant: quia per illos ad conclusionem, velut ad scopum, recta itur; per reliquos eodem perveniri potest, prius tamen alio deflectendum est.

An. Pr. I.  
7. 8, 4.  
I. 23. 1.

*Perfici*<sup>c</sup> igitur et *revocari* atque *reduci* dicimus

<sup>b</sup> Τέλειον μὲν οὖν καλῶ συλλογισμόν τὸν μηδενὸς ἄλλου προσδεόμενον παρὰ τὰ ἐλημμένα πρὸς τὸ φανῆναι τὸ ἀναγκαῖον, ἀτελὴ δὲ τὸν προσδεόμενον ἢ ἐνὸς ἢ πλειόνων, ἃ ἔστι μὲν ἀναγκαῖα διὰ τῶν ὑποκειμένων ὄρων, οὐ μὴν εἴληπται διὰ προτάσεων, Anal. Pr. i. 1. 7. With Aristotle, the "dictum de omni et nullo" is the principle of all syllogism; and the conversions, &c. required by the imperfect syllogisms, must be performed before their conclusions are admitted as valid.

The *direct* and *indirect* syllogisms of the Schoolmen must not be confounded with the perfect and imperfect of Aristotle. An indirect syllogism is one in which the minor term is the *predicate*, the major the *subject* of the conclusion. See Aquinas, Opusc. xlviii. de Syll. cap. 8. Scotus, super lib. I. Anal. Prior, Quæst. xxii. sqq. Occam. Logica, p. iii. cap. 6. Of these indirect moods, five were admitted in the first figure, two in the second, (by converting the conclusions of Cesare and Camestres,) three in the third, (by converting the conclusions of Darapti, Disamis, and Datisi.) Cf. Anal. Pr. i. 7. ii. 1. Of these, the five in the first figure are the most important, being sometimes regarded as a fourth figure. See p. 65, note x. The perfect and imperfect moods of Aristotle are sometimes called *immediate* and *mediate*. Cf. Aquinas, Op. xlviii. cap. 1. Occam. Log. p. iii. cap. 2. Boethius calls them *indemonstrable* and *demonstrable*.

<sup>c</sup> *Perfici*,—τελειοῦσθαι, ἐπιτελεῖσθαι; τελείωσις occurs An. Pr. i. 25. 8. *Reduci*, ἀνάγεσθαι, never ἀπάγεσθαι: *ostensively*, δεικτικῶς.

indirectos, cum per modum aliquem directum illationis suæ vim demonstrant. Et definitur *Reductio*, imperfecti Modi in perfectum mutatio, quo necessitas illationis fiat ex inevidenti evidens. Fiet autem, quando evidenter (h. e. in prima) ostenditur conclusionem vi præmissarum vel 1. talem esse; vel 2. aliam esse non posse. Unde <sup>An. Pr. I. 7. 3.</sup> *Reductio* est vel *ostensiva* vel *ad impossibile* <sup>d</sup>.

Utriusque praxin pro Modis nominatis docent ipsa Modorum nomina a Scholasticis in hunc finem conficta. Nam in iis tres vocales sunt totidem propositiones Syllogismi sua quantitate et qualitate signatæ. Consonæ initiales B. C. D. F. notant modum primæ, ad quem sit *Reductio*. S. P. propositionem, quam vocalis proxime ante-

<sup>d</sup> *Reductio ad impossibile*. This phrase, though sanctioned by respectable authorities, is incorrect; as may be shewn by substituting the definition. What is the meaning of "the change of an imperfect to a perfect mood to the impossible?" The error has been caused by the Aristotelian expression, ἀπαγωγή εἰς τὸ ἀδύνατον; in which, however, ἀπαγωγή does not mean reduction. The *deductio ad impossibile*, as it is usually rendered, (*abductio* would perhaps be better,) is one species of the συλλογισμὸς ἐξ ὑποθέσεως, (see Appendix, note G,) the object of which is, to prove the truth of a given problem, by inferring a falsehood from the assumption of its contradictory. This may be employed in the reduction of syllogisms, but it is also used for other purposes, as by Geometers. (Euclid. i. 7.) The correct expression is therefore *Reductio per deductionem ad impossibile*, or elliptically, *Reductio per impossibile*. The ἀπαγωγή of An. Pr. ii. 25. will be explained hereafter.

Any mood may be reduced by the *deductio ad impossibile*, though in practice it is usually confined to Baroko and Bokardo.

cedens designat, esse in Reductione convertendam :  
 S simpliciter; P per accidens. M transponendas  
 esse præmissas. K reductionem fieri per impos-  
 sibile, i. e. pro præmissa, cujus symbolo adhæret,  
 sumendam esse Conclusionis contradictoriam<sup>e</sup>.  
 Quibus ex præscripto factis, colligitur in prima  
 conclusio vel expositæ eadem, vel eam inferens,  
 vel præmissæ contradictoria, ut in exemplo.

<i>cEs</i>	Nullum	A	est	B
<i>Ar</i>	Omne	C	est	B: <i>Ergo</i>
<i>E</i>	Nullum	C	est	A.

ad

<i>cE</i>	Nullum	B	est	A
<i>IA</i>	Omne	C	est	B: <i>Ergo</i>
<i>rEnt</i>	Nullum	C	est	A.

<i>dIs</i>	Aliquod	B	est	A
<i>Am</i>	Omne	B	est	C: <i>Ergo</i>
<i>Is</i>	Aliquod	C	est	A.

ad

<i>dA</i>	Omne	B	est	C
<i>rI</i>	Aliquod	A	est	B: <i>Ergo</i>
<i>I</i>	Aliquod	A	est	C.

<sup>e</sup> Whence the lines,

S vult simpliciter verti; P vero per acci:

M vult transponi; C [K] per impossibile duci.

<i>bAr</i>	Omne	A	est	B
<i>Ok</i>	Aliquod	C non est	B:	<i>Ergo</i>
O	Aliquod	C non est	A.	

ad

<i>bAr</i>	Omne	A	est	B
<i>bA</i>	Omne	C	est	A: <i>Ergo</i>
<i>rA</i>	Omne	C	est	B. <sup>f</sup>

§. 7. REDUCTIONIS ostensivæ validitas sic ostenditur. Ex præmissis reducendi, per conversionem imperatam, necessario colliguntur præmissæ reducti: atque ex iis, per figuram primam, conclusio reducti: quæ vel ipsa conclusio reducendi erit, vel per illativam conversionem fiet.

Reductionis per Impossibile validitas sic ostenditur. Quoniam præmissæ ex hypothesi sunt semper veræ, ergo contradictoria præmissæ nunquam vera: ergo contradictoria conclusionis nunquam vera<sup>g</sup>: (nam has simul veras esse demon-

<sup>f</sup> Archbishop Whately gives an ostensive reduction of Baroko and Bokardo to Ferio and Darii, by converting the major premise by contraposition. Logic, b. ii. c. 3. §. 5.

<sup>g</sup> Since a false conclusion cannot be drawn without at least one false premise, see An. Pr. ii. 2. 1. But in the present syllogism, one premise is given true, being one of those of the original syllogism; the other, therefore, is false, which is the contradictory of the original conclusion. The syllogism *ad impossibile* will not always be in Barbara; though it is so in the reduction of Baroko and Bokardo.

stratur in Barbara) ergo contradictoria conclusionis semper falsa: ergo conclusio ipsa semper vera.

[Reducitur etiam quilibet modus innominis, facto quod præcipitur, ad præmissas sui subalternantis. Tum vero conclusio, quæ colligitur in prima, erit vel expositæ subalternans, vel in expositam per accidens convertetur.

An. Pr. I.  
45. 1.

Reductiones<sup>b</sup> (cum primæ ad reliquas, tum earum ad se invicem) bene multas, quod et obvia sint, et instituto meo minus necessariae, prætermitto. Illud tamen notatu dignum est, quod cum *Darii* ad *Camestres*, et *Ferio* ad *Cesare* reducatur per impossibile, uterque igitur ad *Celarent*; omnisque adeo modus reducitur ad duos universales primæ.]

An. Pr. I.  
7. 5.

#### §. 8. PERSPICUUM est ex antedictis

I. Syllogismos simplices, certo atque necessario concludentes, fieri 24 modis: 6 in qualibet figura.

An. Pr. I.  
26. 1.

II. Et in aliquo istorum modorum probari posse conclusionem quamlibet de inesse; nempe A uno modo, E quatuor, I septem, O duodecim<sup>i</sup>. Et

<sup>b</sup> Of these reductions, it need only be observed, that they are only possible where the same problem can be proved in both figures; hence only negative syllogisms can be reduced to the second figure, and only particular syllogisms to the third. *Barbara*, *Baroko*, and *Bokardo*, cannot be ostensibly reduced to any other figure.

<sup>i</sup> Rejecting the fourth figure and the subaltern moods, it will be better to say with Aristotle; A is proved only in one figure and one mood, E in two figures and three moods, I in two figures and four moods, O in three figures and six moods. For this reason, A is declared by Aristotle to be the most

rursus; in prima, conclusionem quamcunque: In An. Pr. I. 4. 15.  
 secunda, omnes et solas negativas: In tertia, omnes An. Pr. I. 5. 16.  
 et solas particulares: In quarta, quamlibet præter An. Pr. I. 6. 17.  
 A. De præmissis denique, quod in prima et  
 secunda, major semper universalis est; in prima et  
 tertia, minor affirmativa: In secunda, præmissarum  
 altera negativa: aliaque ejusmodi; quæ ipsa  
 modorum nomina satis indicant<sup>k</sup>.

Atque hinc facile colligitur, inspecto schemate An. Pr. I. 28. 1.  
 modorum, quali medio probanda sit quæstio omnis I. 32. 10.  
 de inesse. e. g. Quæstio A probatur in *Barbara*;  
 medio, de quo prædicatum quæstionis universaliter  
 affirmatur, quodque de subjecto quæstionis affir-  
 matur itidem universaliter: et sic de cæteris.

Adverte tamen quod imperite disputantis est  
 afferre modum innominem; ponet enim in præ-  
 missis plusquam opus est ad conclusionem. Quare  
 et innomines hactenus sunt incensi; quamvis  
 negari nequeant, sicubi per inscitiam adhibentur<sup>l</sup>.

Adverte etiam, quod figura quarta tribus  
 cæteris deterior est; cum aliis de causis, tum ex  
 hoc præsertim, quod medium dicat de majori,  
 hunc de minori, minorem de medio, h. e. medium  
 nugatorie de seipso<sup>m</sup>.

difficult proposition to establish, and the easiest to overthrow;  
 O, the reverse. And, generally, universals are more easily  
 overthrown, particulars more easily established.

<sup>k</sup> See p. 67, note y.

<sup>l</sup> The invention of the five anonymous moods is attributed  
 by Apuleius to Aristo of Alexandria.

<sup>m</sup> Better, *majorem nugatorie de seipso*. Reckoning backwards



III. Syllogismis etiam adnumerantur aliæ argumentorum species; quæ nec stricte loquendo Syllogismi sunt, nec ita tamen peccant, ut propterea mereantur excludi: in quibus scilicet reticetur argumenti pars aliqua, sed quam proclive est cogitatione substituere.

Anal. Pr.  
II. 27. 2.  
Rhet. I. 2.  
8.

1. *Enthymema*; cujus antecedens constat propositione et iudicio; nam iudicium est propositio in mente<sup>n</sup>; e. g. *Homo est animal*; ergo est vivens.

from the conclusion, we find that the major contains the minor, the minor the middle, the middle the major; so that, in fact, the major contains itself.

The fourth figure has been defended by Lambert, who declares it to be useful for the discovery or exclusion of the species of a genus. He frames a principle for it, called *dictum de reciproco*. I. If no M is B, no B is this or that M (Camenes). II. If C is or is not this or that B, there are B's which are or are not C. (Bramantip, Dimaris, Fesapo, Fresison.) The principle is sufficiently clumsy; the utility questionable. For the syllogism is not an instrument of discovery; and how can we *prove* the species of a genus by a particular conclusion? "Some B is C," only proves a *separable accident*. It may be observed also, that the objection which Lambert urges, and with reason, against the conversion of the second and third figures, viz. that by conversion we often substitute an unnatural and indirect for a natural and direct predication, does not hold as regards the fourth. For, in the first three moods no conversion of premises is needed. By regarding the first stated as the minor, the second as the major, we obtain a much more natural conclusion in the first figure. Fesapo and Fresison establish *exceptions*, and therefore, on Lambert's theory, should more naturally fall into the *third* figure.

<sup>n</sup> *Propositio in mente*. Aldrich had in his mind the absurd etymology from *ἐν θυμῳ*, or as Versorius gives it, "ab *en* quod

Dicitur etiam Aristoteli *Syllogismus Oratorius*; et, si integra ejus vis contineatur in unica propositione, *sententia Enthymematica*; utrumque Quintiliano *sententia cum ratione*; ut, *Mortalis cum sis, immortale ne geras odium*. Deest illi ad Syllogismum altera præmissarum; utrum vero major an minor, ex quæstione dignoscitur.

2. *Inductio*; in qua ponitur quantum opus est Anal. Pr. II. 23. 2. de singulis, et deinde assumitur de universis; ut, *Hic et ille et iste magnes trahit ferrum; ergo omnis*. Est igitur Enthymema quoddam; nempe Syllogismus in Barbara°, cujus minor reticetur.

est in, *thymos*, quod est mens, et *monos*, quod est unum, quasi in mente retinens unam propositionem." The erroneousness of this etymology (besides its intrinsic absurdity) appears from the word *ἐνθύμημα* being found in the Greek language before it assumed a technical meaning; e. g. Soph. Œ. C. 292, 1199. Some Logicians attempt to distinguish between the Logical and the Rhetorical Enthymeme, (see Sanderson, b. iii. ch. 8.) The distinction is not authorized by Aristotle, and is liable to the objection which must always lie against a wanton alteration of the meaning of technical terms. For the Enthymeme of Aristotle, see Appendix, note E.

• The supposed minor is, of course, "All magnets are this, that, and the other." In this perversion, Aldrich has been preceded by Zabarella, De Meth. lib. iii. cap. 3. Archbishop Whately departs still further from Aristotle, and makes Induction a Syllogism in Barbara with the *major* premise suppressed. Thus:

"That which belongs to this, that, and the other magnets,  
belongs to all;  
Attracting iron belongs to this, that, and the other;  
Therefore it belongs to all."

For the real nature of Logical Induction, see Appendix, note F.

Anal. Pr.  
II. 24. 1.  
Rhet. I.  
2. 19.

3. *Exemplum*; (Aristoteli *Inductio Oratoria*<sup>p</sup>)  
ubi quod ponitur de singulari noto, assumitur de

<sup>p</sup> The complete example comprises both an imperfect induction and a syllogism, in the following form :

Pisistratus aimed at tyranny,  
Pisistratus asked for a guard,  
(Therefore) All who ask for a guard aim at tyranny;  
Dionysius asks for a guard,  
(Therefore) Dionysius aims at tyranny.

The Example differs from the Induction in two respects. 1st, Induction proves the universal from a complete enumeration of the individuals; Example selects single cases. 2dly, Induction stops at the universal; Example infers syllogistically a conclusion regarding another individual. The Example is defined, An. Pr. ii. 24. 1. "proving the major of the middle by a term resembling the minor." It is thus distinguished from Induction, which is said to prove the major of the middle by the minor. Anal. Pr. i. 23. 2. The definition has reference to the conclusion of the inductive portion of the Example: "aiming at tyranny," being the major; "asking for a guard," the middle; "Dionysius," the minor; "Pisistratus," the *ὑποκείμενον*.

The Example is sometimes loosely called, "reasoning from *Analogy*." See Mill's Logic, b. iii. ch. 20. The latter term properly signifies a reasoning founded not on absolute resemblance, but on resemblance of *Ratios*. Such is the *παραβολή* mentioned by Aristotle, Rhet. ii. 20. 4; the relation of a ruler to a state being similar to that of a pilot to a ship. In the same way it might be argued that obedience is due from a colony to the mother-country, as from a child to a parent. Neither the analogy, nor the example proper, have any *logical* force. Logic recognises none but formal consequence. That there is none such in these, may be seen by putting them into symbolical form. Thus; A and B are both X, A is also Y, therefore B is Y. (Example.) Or; A is to B as C to D, A is X, therefore C is X. (Analogy.) Their *moral* force may vary, according to circumstances, from zero to moral certainty. In short, they are *material* inferences, and, as such, have place in Rhetoric, but not in Logic. See further, Introduction, p. xiii.

simili ignoto : ut, *Sylla et Marius laceravere rem-publicam* ; ergo *Cæsar et Pompeius lacerabunt*. Hujus etiam minor reticetur ; quapropter (ut in cæteris) quæstionem *assumi* dico ; neque enim *colligitur* nisi ex posito et subintellecto.

4. *Sorites*<sup>1</sup> ; in cujus Antecedente, ex ordinata serie terminorum, præcedens quisque subjicitur sequenti, donec a subjecto quæstionis pervenitur ad prædicatum, v. g. *Homo est animal : animal est vivens : vivens est substantia* ; ergo *Homo est substantia*. In Sorite igitur subaudiuntur Syllogismi quot sunt intermediæ propositiones ; (vel si mavis,

<sup>1</sup> The Sorites is a series of propositions, in which the predicate of each is the subject of the next ; the conclusion being formed of the first subject and the last predicate. It may be expanded into a series of syllogisms in the first figure, the conclusion of each being the minor premise of the next. There will be as many syllogisms as there are intermediate propositions between the first premise and the conclusion ; the first being the only *minor* premise stated. Hence there can only be one particular premise in a Sorites, the first ; the others being major premises in the first figure. And the last is the only premise which may be negative : for any previous negative premise would produce a negative conclusion, which could not be used as a minor premise in the next syllogism.

The Sorites is not recognised as a distinct kind of reasoning by Aristotle. Nor is there any reason why it should have been ; as it is merely a combination of ordinary syllogisms, succinctly expressed. Its distinct exposition is attributed to the Stoics. But the principle, as Melancthon observes, is implied in Categ. 3. 1. and the Sorites itself is alluded to in Anal. Pr. i. 25. 2, 11. The Sorites must not be confounded with the well-known fallacy of the same name, attributed to Eubulides of Miletus. In fact, the term has been loosely applied to various kinds of reasoning.

quot in antecedente termini intermedii;) unde et a cumulo nomen habet.

5. Soriti affinis est Syllogismus, cujus præmissarum altera est sententia Enthymematica<sup>r</sup>; ut, *Nullus injustus est amandus: Omnis Tyrannus (crudelis cum sit) est injustus; ergo Nullus Tyrannus est amandus*. Qui quidem Syllogismus peculiare nomen non habet<sup>s</sup>; præmissæ autem Enthymematicæ antecedens, Aristoteli *Prosylogismus* est<sup>t</sup>.

Anal. Pr.  
I. 25. 11.  
I. 28. 5.

6. Huc denique revocandum est compendium illud disputandi opponentibus usitatissimum, reticendi scilicet conclusionem; cum sit ipsa quæstio, quam respondens non supponitur ignorare.

[Admittuntur denique in Scholis etiam Syllogismorum formulæ, quia contra regulas voce tantum, non sensu, peccant, et mutata phrasi ad canonicas facile revocantur. Suntque nihil aliud quam licentiæ quædam Syllogisticæ, et in accurata disputatione non videntur admittendæ.

<sup>r</sup> On the Enthymematic sentence, see Arist. Rhet. ii. 21. 6.

<sup>s</sup> It is sometimes called an *epicheirema*. The word originally was synonymous with Dialectic Syllogism. See Top. viii. 11, 12. Of this *epicheirema* or *argumentatio*, the Rhetoricians enumerated various kinds, *tripartita*, *quadripartita*, *quinquepartita*, &c. See ad Heren. ii. 2. ii. 19. Cic. de Inv. i. 37 sqq. Quint. Inst. v. 13. Finally, the name Epicheirema was limited to the quadripartite. Cf. Trendelenburg, Elem. §. 33.

<sup>t</sup> Not exactly. The prosyllogism, or antecedent syllogism, of Aristotle, is a syllogism employed to prove one of the premises of another syllogism. It need not be expressed in a curtailed form. See Pacius on Anal. Prior. i. 35. 3. Biese, vol. i. p. 157.

1. Quando pro termino repetendo substituitur <sup>Anal. Pr. I. 39.</sup> vox illi æquipollens. Ut in hoc, *Ens naturale constans corpore organico et anima rationali est homo: Socrates est ejusmodi: ergo est homo*, et similibus. Potest enim Sophista abuti ista libertate vel ad nugandum vel ad fallendum.

2. Quando fiunt Syllogismi ex obliquis, qualis est, *Omnis hominis equus currit: Socrates est homo; ergo Socratis equus currit*. Pro minori rectius dixeris *Socratis equus est hominis equus*, alias consequentia, licet bona, non erit immediata. Atque illo insuper laborat disputatio omnis ex obliquis, quod præter necessitatem aperit locum fallaciæ.

3. Quando propositio aliqua intelligitur contra quam sonat, e. g. *Quod non habet partes non interit per dissolutionem partium: Anima humana non habet partes; ergo anima humana non interit per dissolutionem partium*. Nam major sonat negative, intelligitur vero affirmative: puta, *Quod interit &c. habet partes*. Vel etiam singulæ propositiones intelliguntur affirmative, ac si esset Syllogismus, *Omne expers est incorruptibile: Anima humana est expers; ergo anima humana est incorruptibilis*.

Eodem accenseri possunt Syllogismi quales Author *Artis cogitandi*<sup>u</sup> vocat *Complexos*, in quibus

<sup>u</sup> *Author Artis Cogitandi*. The work alluded to is "l'Art de penser," commonly called the Port Royal Logic. This work has been ascribed to various authors, but was most probably written by Arnauld, assisted by Nicole; the first edition was published at Paris in 1664. The character of the book by no means warrants the contemptuous opinion of it, here and elsewhere expressed by Aldrich.

etiam *dijudicandis* jactat se satis imperite. v. g. p. 164. laudat hunc Syllogismum, *Lex divina jubet Reges honorari: Ludovicus XIV est Rex; ergo Lex divina jubet Ludovicum XIV honorari*. Ubi valet certe Argumentum; Syllogismus tamen est falsissimus, cum habeat quinque terminos. Nam ex conclusione patet quod major terminus est *jubet Ludovicum XIV honorari*, et minor *Lex divina*: ergo minor Propositio *Lex divina jubet Reges honorari*: ergo Medius terminus *jubet Reges honorari*: ergo Major Propositio debuit esse, *Quod jubet Reges honorari, jubet Ludovicum XIV honorari*; et tum valeret Syllogismus; nec redundarent duo termini, qui in secunda propositione jam redundant.

P. 166. Syllogismum hunc improbat\*, *Debemus credere Scripturæ: Traditio non est Scriptura; ergo non debemus credere Traditioni*; quia eum scil. imperite reducit ad primam, cum tamen Syllogismus apertissime hoc dicat in secunda, *Objectum fidei divinæ est Scriptura: Traditio non est Scriptura*; ergo *Traditio non est Objectum fidei divinæ*.

Ibidem imperite autumat Syllogismum sequentem, in quo omnes propositiones videntur affirmativæ, esse in secunda; *salvari* vero, quia minor sensu exclusiva, negativam in se contineat. Quod

\* *Syllogismum hunc improbat*. In this instance, it is scarcely necessary to observe that the Port Royal Logicians are right, and Aldrich is wrong. The premise does not state that *nothing but Scripture* is to be believed; and therefore the conclusion drawn is illogical.

si ipsos Syllogismi terminos rite dignoscere potuisset, vidisset sane Syllogismum esse in Barbara transpositis præmissis, v. g. *Bonus Pastor est paratus animam ponere pro ovibus; Pauci hoc sæculo sunt parati* &c. ergo *Pauci hoc sæculo sunt Boni Pastores*. Hujus conclusio perspicue dicit (non de paucis, quod sunt Boni Pastores, sed) de Bonis Pastoribus, quod sunt hoc sæculo pauci. Quare Major terminus est *hoc sæculo pauci*, et Minor *Boni Pastores*. Ergo Minor Propositio, *Boni Pastores sunt parati* &c. et Medius terminus, *parati animam ponere pro ovibus*. Syllogismus vero hic est, *Qui parati sunt animam ponere pro ovibus sunt hoc sæculo pauci: Qui sunt Boni Pastores sunt parati animam ponere pro ovibus: ergo qui sunt Boni Pastores sunt hoc sæculo pauci*<sup>1</sup>.

Hæc dixisse erat operæ pretium, nequis temere repudiaret eos qui, si non videntur, sunt tamen revera Syllogismi.]

<sup>1</sup> *Hoc sæculo pauci*. Aldrich's solution is untenable. "Few" is not predicated *distributively*, but *collectively*. From "wise men are few," we cannot infer, "Socrates is few." The syllogism, therefore, *as stated by Aldrich*, becomes a fallacy of division; though, when tested by common sense, it is unquestionably valid. The Port Royal Logicians substitute for the minor premise, *Multi Pastores hoc sæculo non sunt parati, &c.* which is perhaps the most satisfactory way of treating the proposition, regarded as a single statement. But in fact it contains two distinct assertions; 1st, that some men are prepared; 2dly, that most men are not. The reasoning should thus be resolved into two distinct syllogisms. See Kant, Logic, §. 31.



## CAP. IV.

*De Syllogismis Hypotheticis*<sup>a</sup>.

§. 1. *Syllogismus Hypotheticus*, est in quo una, duæ, vel tres propositiones hypotheticæ. v. g. *Si sapit, est beatus: Sapit; ergo est beatus.* Vel, *Qui sapit est beatus; Si est Philosophus, sapit; ergo Si est Philosophus, est beatus.* Vel, *Si sapit, est beatus: Si est Philosophus, sapit; ergo Si est Philosophus, est beatus.* Nos de eo tantum loqui instituimus qui est cæteris usitator, in quo nempe Major Hypothetica<sup>b</sup>.

*Propositio Hypothetica late sumta* definitur, Plures Categoriæ per conjunctionem aliquam unitæ, et conjunctio vocatur *Copula*; estque *Conditionalis, Disjunctiva, Causalis*<sup>c</sup> &c. ut apud Gram-

<sup>a</sup> Hypothetical syllogisms, in the present sense of the term, are not treated of by Aristotle. An exposition of them was first sketched out by Theophrastus, which was afterwards further developed by Eudemus and the Stoics. None of these works, however, have come down to us. A few notices may be gathered from the Greek commentators; but our principal extant authority on the subject is Boethius. Of the *συλλογισμοὶ ἐξ ὑποθέσεως* of Aristotle, which Pacius has confounded, and M. St. Hilaire attempts to identify, with the hypotheticals of Theophrastus, some account will be given in the Appendix, note G.

<sup>b</sup> This is the only kind of hypothetical syllogism in which the conclusion is categorical. If the minor premise, or both premises, are hypothetical, the conclusion is so too. A syllogism with all three propositions hypothetical was called by Theophrastus, *δι' ὅλου ὑποθετικός*, (Scholia, p. 179, a. 16.)

<sup>c</sup> *Causalis*, e. g. "Because A is B, C is D." This is, of

maticos; unde totidem Hypotheticarum species, suis copulis cognomines. Sed ad Syllogismum non faciunt, Præter *Conditionalem*, et *Disjunctivam*<sup>d</sup>; quarum exempla, *Si sapit est beatus. Vel dies est vel nox.*

Conditionalis habet vim illativam. Unde *Conditio* ipsa, sive pars prior, quæ est instar inferentis, *Antecedens* dici solet; *Assertio*, sive pars posterior, quæ rationem habet illatæ, *Consequens*; partiumque inter se connexio, *Consequentia*<sup>e</sup>.

course, no hypothetical at all, except in the loose sense of the above definition. In the same sense were admitted *temporal* hypotheticals, "When A is B, C is D;" *locals*, "Where A is B, C is D," &c. &c.

<sup>d</sup> Nothing can be more clumsy than the employment of the word *conditional* in a specific sense, while its Greek equivalent, *hypothetical*, is used generically. In Boethius, both terms are properly used as synonymous and generic; the two species being called *conjunctivi*, *conjuncti*, or *connexi*, and, *disjunctivi*, or *disjuncti*. Cf. Ed. Rev. No. 115. p. 219. Boethii Opera, p. 610. With reference to modern usage, however, it will be better to contract the Greek word than to extend the Latin one. *Hypothetical*, in the following notes, will be used as synonymous with *conditional*.

<sup>e</sup> It has been questioned whether Hypothetical Syllogisms can be reduced to Categorical. This question must not be confounded with the inquiry, whether the hypothetical *proposition* is formally the same with the categorical. The latter is answered by Kant in the negative, but that decision does not affect the present question. The reduction of hypothetical syllogisms must be governed by the same rules as that of categoricals; and in the latter case, it is allowable to substitute for a given proposition another which, though not identical, is implied by it. For instance, a particular converse is employed instead of its universal exposita. So in hypotheticals, if the new propositions contain the same terms, and are immediately

Conditionalis cujusque sententia est, quod, data Conditione, datur Assertio; quod bifariam explicari potest. 1. *Si detur Conditio, danda est Assertio*; unde *Regula prima*: Posita Antecedente, recte ponitur Consequens. 2. Si daretur Conditio, *danda esset Assertio*; unde *Regula secunda*: Sublata consequente, recte tollitur Antecedens.

Porro hoc unum statuit, Antecedente vera, veram esse Consequentem; non autem ambas esse simul veras, aut simul falsas, aut una vera, falsam alteram:

deducible from the original ones, the reduction is legitimate. This will be the case when the hypothetical proposition has but three terms; both clauses having the same subject or the same predicate. The following instances may thus be reduced:—

- |  |   |  |
|--|---|--|
| I. If All A is B, All A is C,<br>But All A is B;<br>∴ All A is C.  | } | to { All B is C,<br>All A is B;<br>∴ All A is C. |
| II. If All A is B, All C is B,<br>But All A is B;<br>∴ All C is B, | } | to { All A is B,<br>All C is A;<br>∴ All C is B. |

These syllogisms, indeed, were admitted by the Ramists, the great advocates of hypotheticals, to be categorical. But where the hypothetical has four terms, as, "If A is B, C is D," this mode of reduction is not practicable; yet even in this case a categorical syllogism may be constructed, whose propositions, though expressed in different terms, are implied in those of the original syllogism. Thus:

Constructive.

Destructive.

Every case of A being B, is a case of C being D.      Every case of A being B, is a case of C being D.

This is a case of A being B.      This is not a case of C being D.

∴ This is a case of C being D.      ∴ This is not a case of A being B.

Whether this last process shall be called Reduction or not, is a mere verbal question.

per illam igitur, sublata Antecedente, poni vel tolli potest consequens; aut posita Consequente, poni vel tolli Antecedens. Unde *Regula tertia*: Sublata Antecedente, vel Posita Consequente, nihil certo colligitur<sup>f</sup>.

Conditionalis igitur Syllogismi duæ sunt, nec plures, formulæ.

1. Quæ vocatur *Constructiva*.

Si C. D. tum K. Δ.

Sed C. D. ergo K. Δ.

II. Quæ dicitur *Destructiva*<sup>g</sup>.

Si C. D. tum K. Δ.

Sed non K. Δ. ergo non C. D.

§. 2. QUÆ de *Conditionalibus* dicta sunt, *Disjunctivæ* satis cavent. Ejus enim in Syllogismo positæ sententia conditionaliter efferri semper potest<sup>h</sup>.

<sup>f</sup> By adopting the above modes of reduction, it may easily be seen that the violation of this third rule is equivalent, in the case of denying the antecedent, to an illicit process of the major term; in that of affirming the consequent, to an undistributed middle.

<sup>g</sup> The destructive syllogism is naturally reduced to the second figure in the categorical form, and cannot in most cases be brought to the first without considerable awkwardness. This may be avoided by *converting* the hypothetical before reduction. A hypothetical proposition is converted by *Contraposition*; thus, "If A is B, C is D," to, "If C is not D, A is not B." The syllogism may then be treated as a constructive. Cf. Hamilton on Reid, p. 697. Whately's Logic, b. ii. ch. 4. §. 3.

<sup>h</sup> With regard to the import of the disjunctive proposition, Logicians are at issue. The majority (Kant among the number) regard it as stating all possible cases; so that one

v. g. Si posita vel C vel D

Subsumatur

Sed C ergo non D

D non C

non C ergo D

non D C

only of its members can be true. And Aquinas maintains that any disjunctive proposition in which this condition is not observed, is *false*. On this supposition all the four inferences given by Aldrich are valid. But it may be questioned whether the incompatibility of the members appears in the *form* of every disjunctive proposition. *We may happen to know* that two alternatives cannot be true together, so that the affirmation of the second necessitates the denial of the first, and the affirmation of the first the denial of the second; but this, as Boethius observes, is a *material*, not a *formal* consequence, whether it be stated in the hypothetical or disjunctive form. It must be allowed that the examples sometimes adduced on this side of the question have not been very happily chosen. It sounds oddly enough to state a known truth as a possible falsehood, as in the instance, "*Bellum Trojanum cecinit vel Homerus vel Virgilius.*" But other and more natural specimens have been given; e. g. "*Aut olim Troja fuit, aut historia de bello Trojano est mera fabula.*" The case is still clearer when both members of the disjunctive are negative, as in the example given by Boethius, "Si enim quis dicat, aut non est album aut non est nigrum, sive album non esse assumpserit, non necesse erit esse vel non esse nigrum; sive nigrum non esse assumpserit, ut sit vel non sit album, nullam faciet necessitatem." On this supposition only two of the above syllogisms are valid, which may be reduced to hypotheticals as follows:

Constructive.

If A is not B, C is D.

But A is not B.

∴ C is D.

Destructive.

If A is not B, C is D.

But C is not D.

∴ A is B.

For a further account, see Wallis, Log. Thes. 2.

Pro exposita Disjunctiva  
dic conditionaliter

Si C tum non D  
D non C  
non C tum D  
non D C

§. 3. SUPEREST Syllogismus quidam Hypotheticus redundans, alio nomine *Dilemma*<sup>i</sup>, quia ple-

<sup>i</sup> Of the word *Dilemma*, various etymologies have been proposed ; 1. a choice of alternatives offered to an adversary ; 2. a double premise assumed (*λήμμα*) ; 3. a not very probable one given by Keckermann, “a *dis* λαμβάνεσθαι, quia utrinque capit et constringit adversarium contra quem adducitur.” The first seems to be adopted by Aldrich, and is perhaps supported by Cassiodorus, *Expos.* in Ps. 138, 9. “*Dilemma*, quod fit ex duabus propositionibus pluribusve, ex quibus quicquid electum fuerit, contrarium esse non dubium est.” Cf. Victorinus in 1 *Rhet. Cic.* 86. But whatever be the origin of the word, it was certainly employed as synonymous with the *complexio* of Cicero, (*de Inv.* 1. 29.) This is expressly stated by Servius, (on *Æn.* ii. 675.) who is, I believe, the oldest extant writer in whom the word is found. In this sense it may be defined, (omitting the adversary, as belonging rather to Rhetoric or Dialectic than Logic,) “A syllogism, having a conditional major premise with more than one antecedent, and a disjunctive minor.” Its different forms may be thus exhibited :

I. Simple Constructive.

If A is B, C is D ; and if E is F, C is D ;  
But either A is B, or E is F ;  
∴ C is D.

II. Complex Constructive.

If A is B, C is D ; and if E is F, G is H ;  
But either A is B, or E is F ;  
∴ Either C is D or G is H.

rumque duo (etsi interdum plura) proponit adversario capienda; quorum utrumvis acceperit, causa cadet. Tale est illud Biantis, *Si uxorem ducas formosam, habebis κοινὴν, communem; si deformem, ποινὴν, pœnam: ergo Nulla est ducenda*<sup>k</sup>.

<sup>l</sup> Hoc non valet, nisi ita comparetur, ut partem alteram accipi sit necesse; utraque autem feriat; nec possit retorqueri. Quæ si vidisset Bias, suo sibi Dilemmate minus placuisset; neque enim vel formosa uxor vel deformis necessario futura est; sed est media quædam pulchritudo, quam Ennius *statam* appellavit; Favorinus eleganter *uxoriam*. Porro, nec formosa omnis est communis, nec

### III. Destructive, (always Complex.)

If A is B, C is D; and if E is F, G is H;

But either C is not D, or G is not H;

∴ Either A is not B, or E is not F.

There cannot be a *simple* destructive Dilemma of this kind, as is shewn by Abp. Whately, Logic, b. ii. ch. 4. §. 5.

The Dilemma is sometimes exhibited in another form, as a conditional syllogism, in which the consequent of the major premise is disjunctive, and *the whole* denied in the minor; e. g. "If A is B, C is D, or E is F, or G is H; but neither C is D, or E is F, nor G is H; therefore A is not B." This form is given by Wallis, lib. iii. cap. 19.; as well as by Wolf and Kant. But it is a perversion of the Dilemma proper, and introduces no distinction whatever; being merely a common disjunctive syllogism, as is shewn by Wallis himself. It is, in fact, the *enumeratio*, not the *complexio*, of Cicero.

<sup>k</sup> See Gellius, Noct. Att. v. 11.

<sup>l</sup> These remarks entirely relate to the matter, and have nothing to do with the Logical character, of the Dilemma. See Whately, ii. 4. 5.

deformis, poena. Denique Dilemma facile retor-  
queri potest. Puta, *Si formosam duxero, non* Arist. Rhet. II. 23. 15.  
*habebo pœnam; si deformem, non habebo communem.*

Dilemma nihil aliud est, quam *Inductio Negativa*<sup>m</sup>; in qua Syllogismi Major Conditionalis est cum consequente distributiva: puta, *Si omnino, tum sic, vel sic, vel sic*; quam afferre Categorice adeo est proclive ut non indigeat præcepto.

<sup>m</sup> This remark is taken from Wallis, and is only applicable to the Dilemma in his sense of the term. The negative induction appears in this form:

Neither A, nor B, nor C, is allowable;  
But these are all cases of this kind;  
∴ No case is allowable.

This, however, is clearly a perversion of the Dilemma. The conclusion, e. g. *Nulla uxor est ducenda*, does not follow from the premises of the Dilemma of Bias; but requires the additional assumption, that neither matrimonial nuisance is, under any circumstances, to be endured.

The Complex Dilemma, as given above, may be reduced, if required, to a series of hypothetical syllogisms, and so to categoricals; thus:

Constructive.	Destructive.
If E is F, G is H;	If E is F, G is H;
If A is not B, E is F;	If C is D, G is not H;
∴ If A is not B, G is H.	∴ If C is D, E is not F.
If C is not D, A is not B;	If A is B, C is D;
∴ If C is not D, G is H.	∴ If A is B, E is not F.

The reduction of the simple Dilemma is obvious enough. But all such reductions, except as serving to vindicate the universality of the syllogistic model, are rather curious than useful.



## CAP. V.

*De Syllogismo quoad Materiam.*

§. 1. HÆC de Syllogismo quoad *Formam* spectato. Jam de eodem quoad *Materiam*, h. e. *Certitudinem* et *Evidentiam* propositionum ex quibus componitur.

*Certa* autem propositio est, cui nihil occurrit in contrarium, vel quod occurrit instar nihili est; ut, *Omnis homo est risibilis*<sup>a</sup>: *Evidens*, quæ simul

\* This definition is vague enough: the example, however, shews more clearly what is intended. For *risibile* was regarded as a property, flowing from, and demonstrable by, the *differentia rationale*. We may therefore define a certain proposition as "a proposition capable of demonstration." It will thus be distinguished from an *evident* proposition, which is axiomatic and indemonstrable. Both are, of course, *necessary*, which is essential to demonstrative reasoning: but the former is the conclusion of a demonstration; the latter, a premise. Waiving the physical question of the necessary connection of animality and rationality, we may give as examples, of a certain proposition, "The angles of every triangle are equal to two right angles;" of an evident, "Things which are equal to the same are equal to each other."

Such seems clearly to be Aldrich's meaning in the present passage; in which *certa* and *evidens* correspond to what are commonly called *immediata immedietate subjecti*, and *immediata immedietate causæ*. (Cf. Sanderson, lib. 3. cap. 12. from whom this part is chiefly taken.) Aldrich's subsequent language, however, is by no means consistent.

ac percipitur assensum imperat; ut, *Totum est majus sua parte: Dubia*, in qua hæremus, cum illius pars utraque valde se probet intellectui; ut, *Astra regunt homines*; nam et regere et non regere videntur.

Dubitanti siquid aliud occurrat, quo pendens animus in alterutram partem propendeat, quod erat Dubium fit *Probabile*<sup>b</sup>. Et potest, quod pro-<sup>Top. I. 1. 3.</sup> batur, *Verum* esse, sed probanti tantum *Verisimile* est. Multis nihilominus assentimur isto modo, et assensui nomen est *Opinio*.

Est igitur *Opinio* propositionis *tantum probabilis*; <sup>An. Post. I. 33. 2.</sup> eique nulla competit certitudo; sed in ipsa sui ratione includit *formidinem oppositi*. Sunt Opinioni tamen *Gradus* quidam *ad certitudinem*, pro diverso pondere rationum quæ assensum movent, diversi. Est quod omnibus, quod plerisque, quod <sup>Top. I. 1. 3.</sup> sapientibus videtur; et quod horum singulis, quod plerisque, quod celeberrimis; quorum omnium dispar est probabilitas; quorumdam vero tanta, ut ad certitudinem quam proxime accedat.

§. 2. QUI *Opinionem* (h. e. assensum quemlibet scientia minorem) parit, Syllogismus appellatur *Dialecticus*, *Διαλεκτικός*<sup>c</sup>, i. e. probabiliter disse-<sup>Top. I. 1. 2.</sup>

<sup>b</sup> Ἐνδοξα δὲ τὰ δοκοῦντα πᾶσιν ἢ τοῖς πλείστοις ἢ τοῖς σοφοῖς, καὶ τοῖς τοῖς πᾶσιν ἢ τοῖς πλείστοις ἢ τοῖς μάλιστα γνωρίμοις καὶ ἐνδόξοις. Arist. Top. i. 1. 3. Such propositions form the premises of dialectical syllogisms.

<sup>c</sup> Διαλεκτικός δὲ συλλογισμὸς ὁ ἐξ ἐνδόξων συλλογισζόμενος. Top. i. 1. 2. On the origin and different uses of Dialectic, some

rens: quæque proprie dicitur *Dialectica*, est pars Logicæ quæ de hoc agit Syllogismo. Multiplex autem est materia circa quam versatur opinio, et per omnes sparsa disciplinas: cujus infinitam pene varietatem ad pauca capita revocavit Aristoteles, et sub iis Effata Dialectica suis quasi in sedibus *locavit*. Hæc itaque capita Τόπους, i. e. *Locos* appellat; unde Syllogismus Dialecticus alio nomine *Topicus* dicitur<sup>d</sup>.

De Locis Dialecticis et ad ea pertinentibus Effatis, sive (ut Scholastici vocant) Maximis<sup>e</sup>,

remarks will be found in the Introduction. Its name had originally reference, not to the probable character of the matter, but to the colloquial form.

<sup>d</sup> The τόποι are general principles of probability, standing in the same relation to the dialectic syllogism as the axioms to the demonstrative. A definition is given, Rhet. ii. 28. 1. ἔστι γὰρ στοιχείον καὶ τόπος εἰς ὃ πολλὰ ἐνθυμήματα ἐμπίπτει. The origin of the name may be illustrated by calling it the *place* in which we look for middle terms; with which may be compared Cicero's definition, Top. ch. 2. "Itaque licet definire, locum esse argumenti sedem: argumentum autem, rationem, quæ rei dubiæ faciat fidem."

<sup>e</sup> The Schoolmen divided *Loci* into two kinds, which they called *Maximæ*, and *Differentiæ Maximarum*. The former were propositions expressing a general principle of probability, (or even of certainty, for the term was extended to include axioms;) such as, "De quocunque prædicatur definitio, et definitum." The latter consisted of one or more words, expressing the point in which one maxim differed from another; e. g. the above maxim was said to be *ex definitione et definito*: so in Aldrich's example the maxim is, *Peritis credendum est in sua arte*; the differentia, *Testimonium*. The latter were sometimes called simply *Loci*. Cf. Petr. Hisp. Tract. v. The distinction

plura non loquor. Pro exemplo tamen hoc accipe:  
Inter Maximas Loci primi, qui est *Testimonium*,<sup>Top. III.</sup>  
reperitur hæc; *Peritis credendum est in sua arte*:<sup>1. 2.</sup>  
ex qua elicitur hujusmodi Syllogismus Topicus.  
*Quod* (Pythagoras) *Ipse dixit concedendum est*:  
*Migrare animas Ipse dixit*; ergo *Migrare animus*  
*concedendum est*. Probatur Major; quia *Peritis*  
*credendum est in sua arte*.

§. 3. *CERTITUDO* eadem videtur, quæ improprie  
vulgo dicitur *Evidentia Moralis*<sup>1</sup>; quæque iis con-  
venit effatis, de quibus nemo prudens dubitaverit:  
qualia præsertim sunt *Principia* ad vitam moresque

is not warranted by Aristotle, with whom the τόποι are always Propositions.

The history of the word Maxim is given in a learned note by Sir W. Hamilton, Reid's Works, p. 766. He shews that it originated with Boethius, by whom, however, it was merely used as an adjective, in the phrase *maxima propositio*. The Schoolmen dropped the latter word, and employed *maxima* as a substantive; as had previously been done in Greek by Psellus, from whom the whole account in Petrus Hispanus is borrowed. Τόπος διαίρεται εἰς τόπον τὴν μεγίστην καὶ εἰς τόπον τὴν διαφορὰν τῆς μεγίστης. Μεγίστη ἐστὶ πρότασις ἥς οὐκ ἔστιν ἄλλη προτέρα καὶ γνωριμωτέρα, ὥς τὸ πᾶν ὄλον μείζον ἐστι τοῦ ἰδίου μέρους... τόπος διαφορὰ μεγίστης ἐστὶν ᾧ διαφέρει μία μεγίστη ἐτέρας.

<sup>1</sup> In this account of certainty, Aldrich has departed considerably from his first definition. "Omnis homo est risibilis" can hardly by any stretch of language be called a moral precept. Moral certainty is a very different thing from demonstrative certainty, being merely a high degree of probability. But nothing can be more confused than the whole of this chapter.

pertinentia, cum conclusionibus quæ ab his legitime deducuntur. Nam hujusmodi propositiones videntur esse plusquam probabiles, nondum tamen evidentes: neque enim eas quisque amplectitur quamprimum apprehendit; sed iis prudens sine ulla formidine assentitur.

*Certitudo*<sup>s</sup> duplex est; alia *Objecti*, quæ est rei percipiendæ; alia *Subjecti*, quæ est Intellectûs percipientis. Et utrique sui sunt *gradus*. Est enim *Certius* certitudine *Objecti*, id cui minus obest; certitudine *Subjecti*, cui quod obsit minus percipitur. Evidentia similiter duplex est; *Objecti* nempe, et *Subjecti*; et utrique sui sunt *gradus*. Dispar enim evidentia est, prout id quod percipitur vel est sponte perspicuum; vel a sponte perspicuo propius abest; vel utrumvis horum videtur.

<sup>s</sup> We have now got back again to demonstrative certainty. This part is taken from Sanderson, whose account is infinitely clearer than that of Aldrich. "Demonstratio est *Syllogismus faciens scire*. Scire autem unumquodque dicimur, cum causam cognoscimus propter quam res est, quod illius rei causa sit, nec possit res aliter se habere. Unde duplex oritur scientiæ certitudo: altera objecti, vel *scibilis*, quando rei causa proxima apprehenditur: altera subjecti, vel *scientis*, quando sciens certus est rem non posse aliter se habere. Per illam distinguitur *scientia* ab *errore*: per hanc ab *opinione*, quæ includit in ratione sui formidinem oppositi." From the above account it is clear that there can be no degrees of either Certainty. For any obstacle as regards the object, renders the proposition no longer certain, but doubtful; any consciousness of such in the subject, reduces the state of mind from knowledge to opinion. The same may be said of Evidence, in the proper limitation of the term. A proposition not *sponte perspicuum* may be certain, but is not evident.

Atque hinc, rursus, *Evidentia*<sup>b</sup> multifariam dividitur. Sed nostro sufficit instituto, quod hæc, de qua loquimur, Propositionis *Evidentia*, vel est 1. *Axiomatis* sponte perspicui; cui proinde sine ulla probatione assentimur: vel 2. *Conclusionis* ab ejusmodi axiomatibus (*immediate* an *mediate* parum refert, modo) rite deductæ. Nam cum una sit Veritas, sibi constans, apteque cohærens; quodque verum, vel per se certum atque evidens sit, vel cum effatis quibusdam certis et evidentibus necessario connexum; fit, ut quamprimum apprehenditur hæc connexio, eadem omnia quasi luce per-fusa, parem (specie) consequantur assensum.

§. 4. Qui postremæ huic evidentiaë competit <sup>An. Post.</sup> assensus apud Logicos vocatur *Scientia*. Est igitur <sup>I. 2. 2.</sup> *Scientia conclusionis certæ et evidētis*, a præmissis <sup>I. 4. 1.</sup> certis et evidentibus legitime deductæ<sup>i</sup>. Certitudinem vero utramque intelligo; et utramque (tam Objecti scilicet quam Subjecti) evidentiam.

<sup>b</sup> Evidence is here extended so as to include not only axiomatic but demonstrated propositions. This licence Aldrich perhaps took from Crakanthorpe, who uses *certain* and *evident* as synonymous terms; but he departs from his principal authority, Sanderson, and is inconsistent with himself. *Evident* should be limited to the axioms, the original premises of demonstration; *certain*, to the conclusion.

<sup>i</sup> It would be better to say, "conclusionis certæ, a præmissis certis vel evidentibus." The premises in demonstration may be axiomatic principles, or the conclusions of previous demonstrations. In both cases the result is *scientia*, though in the latter the demonstration is not *potissima*.

An. Post.  
I. 33. Nam per Objecti certitudinem Scientia distinguitur ab *Errore* ; per Subjecti certitudinem ab *Opinione*<sup>k</sup>. Si desit evidentia subjecti, nulla est *Scientia* ; ubi sola adest, *persuasa* tantum, non *realis* evidentia est.

An. Post.  
I. 2. 2.  
I. 4. 1.  
Top. I. 1. 2. Qui *Scientiam* parit Syllogismus appellatur *Scientificus* ; alio nomine, 'Αποδεικτικὸς *Demonstrativus*, et interdum *Demonstratio*. Conclusiones enim certas et evidentes apud Mathematicos reperi multas in confesso est: cumque Illi, quæ docent, soleant adjuncto *Diagrammate* ostendere ; seque propterea non rem probare, sed (quod majorem innuit Evidentiam) *Demonstrare* dicant ;

<sup>k</sup> This will be best understood from Sanderson's definitions. "Error est habitus, quo mens inclinatur ad assentiendum sine formidine falsitati. Opinio est habitus, quo mens inclinatur ad assentiendum cum formidine alicui propositioni propter probabilitatem, quam videtur habere." Error then, as being an unhesitating assent to falsehood, implies certainty of the subject, but not of the object. Opinion, on the other hand, cannot consist with certainty of the subject: nor yet, strictly speaking, with that of the object; for the latter, according to the definition given above, depends not on the *existence*, but on the *apprehension*, of the proximate cause. A proposition scientifically known by one man, may be matter of opinion to another; but in the latter, it has not even objective certainty. For the terms *object* and *objective* are not used here strictly in their modern sense, to denote the absolute affections of things without the mind, but for their character when presented to the mind as objects of cognition. On the history of these terms, see Sir W. Hamilton, Reid's Works, p. 806.

Error, as here defined, will come under the state of mind described by Aristotle, Anal. Post. i. 6. 8. οἴσεται οὐκ εἰδώς, ἐὰν ὑπολάβῃ ὡς ἀναγκαῖον τὸ μὴ ἀναγκαῖον.

arcesso igitur ab illis vocabulo, *Syllogismus scire faciens* apud Logicos vocatur *Demonstratio*. Cumque in Scientia (siqua forte possibilitas, tamen) nullus sit erroris metus; quod hujusmodi Syllogismis, sive uno, sive pluribus probatur, id libenter agnoscimus sicut perhibetur *ita esse*; et *aliter* (saltem naturaliter) *se habere non posse*.

§. 5. DUE sunt Demonstrationis species. Prima, quæ demonstrat Ὅτι, sive *Quod res sit*; probando, vel simpliciter et directe *rem ita esse*, et tum vocatur *Ostensiva*, seu potius *Directa*; vel si *non sit*, absurdi aliquid necessario secuturum. Hæc est quæ Græce dicitur Ἀπαγωγή<sup>1</sup>, Latine, *ducens ad absurdum*, *impossibile*, *incommodum*, uno verbo recte dixeris *Obliquam*. Exemplum ejus dat reductio Syllogismi a *Baroko* vel *Bokardo* ad *Barbara*.

Anal. Pr.  
II. 11. 1.  
An. Post.  
I. 26. 1.

<sup>1</sup> ἀπαγωγή. *ducens ad impossibile*. This is only a correct rendering of the Aristotelian ἀπαγωγή εἰς τὸ ἀδύνατον: see p. 75. note d. The term ἀπαγωγή, when it occurs by itself, has a different meaning. It is a syllogism whose major premise is certain, and its minor either more probable or more easily demonstrable than the conclusion. It thus holds an intermediate place between the demonstrative and the dialectic syllogism. See Anal. Pr. ii. 25.

The connecting notion between these two senses of ἀπαγωγή seems to be that of a *change of question*; a *turning off* from the immediate point to be proved to something else on which it may be made to depend. Thus, in the *deductio ad impossibile*, instead of proving the original question directly, we attempt to shew the falsehood of its contradictory; and in the present case we abandon the immediate proof of the conclusion for that of the minor premise on which it depends.



*Ostensiva Directa* fit duobus modis.

An. Post. I. 1. Quando aliquid demonstratur per *Effectum* ;  
13. 1, 2. ut si diceret, *Luna Soli opposita nigra cernitur* ;

An. Post. I. ergo patitur *Eclipsin*. 2. Quando per *Causam*  
13. 1, 5. *remotam* ; ut si idem colligeret quia *Sol et Luna*  
*diametraliter opponuntur*. Quod si illud demon-  
strares per *Causam proximam*, quia nempe *Terra*  
*inter Solem et Lunam interponitur*, tum fieret

An. Post. Secunda Demonstrationis species  $\Delta\acute{o}\tau\iota$ , i. e. quæ  
I. 13. 3. docet *Quare*, vel *Propter quid* res sit ; causam  
II. 16. 4, 6. ejus assignando, non quamcunque, sed *proximam*  
II. 17. 3. seu *immediatam*<sup>m</sup>. Sic enim statuunt Logici quod

<sup>m</sup> *Immediatam*. The word *ἀμεσος* is used in two senses by Aristotle. 1. For a proposition not proved by any *higher* middle term ; i. e. an axiomatic principle, forming the first premise of a demonstration. Such is the sense in Anal. Post. i. 2. 2. and ii. 19. 1. 2. For a premise immediate as regards its conclusion ; i. e. not requiring the insertion of *lower* middle terms to connect its terms with those of the conclusion. Such is the sense in An. Post. i. 13. 1. This second sense is intended here.

Of an immediate proposition in the first sense, the favourite scholastic example was, *Omne animal rationale est risibile* ; the predicate being regarded as flowing directly from the subject, not as connected with it by any intervening cause. Whereas in *homo est risibilis*, between predicate and subject intervenes the middle term *rationalis*. See Aquinas, Opusc. 48. de Syll. Demon. chap. 5. Zabarella, in I. Anal. Post. c. 2. cont. 9. Hence the following specimen of a *demonstratio potissima* :

*Omne animal rationale est risibile ;*  
*Omnis homo est animal rationale ; ergo*  
*Omnis homo est risibilis.*

Any subsequent demonstration from this conclusion ; e. g.

*Scientia* omnis est *Cognitio rei per causam*, sed *proprie dicta per propriam*, h. e. *proximam*: nam per remotam *Cur sit* aliquatenus ostenditur; nihil amplius quam *Quod sit* demonstratur.

Utriusque Speciei membra gradu differunt. Nam obliqua *ὅτι* est deterior directa, quia non demonstrat *rem ita esse*, nisi quatenus docet *eam aliter se habere non posse*; quod tametsi eodem redeat, tamen animo minus satisfacit; nam si par sit utrobique Certitudo, hujus tamen minor Evidentia est<sup>2</sup>.

Habet et *Διότι* sous gradus; quia potest esse causa proxima quæ non est *prima*, h. e. per se nota et indemonstrabilis: cujus ideo præfertur Evidentia, quia (contra quam cæteræ) sua luce est conspicua, et nihil indiget aliena. Quare, quæ hanc adhibet causam demonstratio, et habetur, et nominatur *Potissima*.

Sunt igitur ex mente Logicorum Demonstrandi quatuor modi; quorum alter alteri evidentia, adeo-

*Omnis Philosophus est homo*; ergo *Omnis Philosophus est rationalis*; would be *per causam proximam, sed non primam*. Whether this distinction can fairly be traced to Aristotle is questionable. Some further remarks will be found, Appendix, note H.

<sup>2</sup> Here we have a third meaning of *evidentia*. It is now, not the evidentness of a *Proposition*, but that of a *Demonstration*; i. e. the clearness of connection between premises and conclusion.

An. Post.  
I. 2. 2.

que dignitate, præstat°. *Valet Demonstratio obliqua; Potens est quælibet Directa; Potior quæ per causam proximam, Potissima quæ per primam demonstrat.* Hujus est vulgata illa Definitio, *Syllogismus constans veris, primis, immediatis, notioribus, prioribus, et causis Conclusionis*<sup>p</sup>. Exemplum, nisi forte apud Mathematicos, an uspiam occurrat nescio.

° The following table may assist the learner.

Demonstratio			
Quod sit		Propter quid sit	
Obliqua	Directa	Non Potissima	Potissima
per deductionem ad impossibile		per causam proximam quæ non est prima	per causam proximam et primam
	per effectum		per causam remotam

<sup>p</sup> This definition is translated from Aristotle. Ἀπόδειξιν δὲ λέγω συλλογισμόν ἐπιστημονικόν. Ἐπιστημονικὸν δὲ λέγω καθ' ὃν τῷ ἔχειν αὐτὸν ἐπιστάμεθα. Εἰ τοίνυν ἐστὶ τὸ ἐπίσταςθαι οἷον ἔθεμεν, ἀνάγκη καὶ τὴν ἀποδεικτικὴν ἐπιστήμην ἐξ ἀληθῶν τ' εἶναι καὶ πρώτων καὶ ἀμέσων καὶ γνωριμωτέρων καὶ προτέρων καὶ αἰτίων τοῦ συμπεράσματος. Anal. Post. i. 2. 2. See further, Appendix, note H.

CAP. VI.

*De Methodo*\*.

§. 1. METHODUS est talis dispositio partium aliqujus disciplinæ, ut integra facilius discatur<sup>b</sup>. Estque duplex. 1. *Inventionis*, quæ disciplinæ Eth. Nic. I. 2. 5. Phys. Ausc. I. 1. 1. præcepta invenit; 2. *Doctrinæ*, quæ tradit. Prior procedit a sensibilibus, et singularibus, quæ sunt *nobis notiora*, ad intelligibilia, et universalialia quæ sunt *notiora naturæ*; posterior, contra<sup>c</sup>.

\* *Méthodos* in Aristotle is employed, with various shades of meaning; 1. for any instrument of acquiring or communicating knowledge; as in de An. i. 1. 4. *πότερον ἀπόδειξις τίς ἐστὶν ἢ διαίρεσις ἢ καὶ τις ἄλλη μέθοδος*. Cf. Philoponus, Scholia, p. 235, a. 10. 2. for knowledge reduced to system; and thus as equivalent to *ἐπιστήμη*: Phys. Ausc. i. 1. 1. Eth. Nic. i. 1. 1. Top. i. 2. 2. 3. for a systematic treatise on any branch of knowledge, synonymous with *πραγματεία*: Polit. iv. 2. 1. vi. 2. 6. Eth. Nic. i. 2. 9. But method is not treated of by Aristotle in any of his logical writings; and with reason, for the subject, except so far as method is synonymous with inference, is extra-logical.

<sup>b</sup> Method has been treated of by Logicians in two principal senses. 1. As a process of inference from the known to the unknown; which is the earlier sense of the term, and sanctioned by Aristotle and his Greek interpreters. 2. As an arrangement of truths already known, with a view of communicating them to others. The last corresponds to the Greek *τάξις*, and should rather be called *Ordo*. It is distinguished from the first by Zabarella and others. Aldrich's definition corresponds only to the second sense of *Methodus*; but in his subsequent division he confounds it with the first.

<sup>c</sup> The *Methodus Inventionis* can only be a process of inference; for no arrangement of parts is possible before they have been discovered. The *discovery* of general principles from individual

Methodus Doctrinæ duplex est. <sup>d</sup> *Perfecta*, ἀκροαματική; et *Imperfecta*, ἐξωτερική. Perfecta rursus, vel *Universalis* est, qua integra disciplina, vel *Particularis*, qua aliqua disciplinæ pars docetur. Utraque duplex est.

objects of sense, if limited to the inferential process itself, will be *Induction*. The term, however, is sometimes extended so as to include the preliminary accumulation of individuals. In this wider sense it will embrace the four successive steps given by Aristotle, Anal. Post. ii. 19. αἰσθησις, μνήμη, ἐμπειρία, ἐπαγωγή.

But the *Methodus Inventionis* must not be absolutely limited to Induction and its preliminaries, though these are the most important instruments of discovery. In some sciences, as in mathematics, truths are chiefly discovered by demonstration; and till so discovered, cannot, of course, be imparted to others by the *methodus doctrinæ*.

Induction and Syllogism are the only two methods of *inference*. The Greek commentators, Ammonius and Eustratius, enumerate four, adding Division and Definition; but in these last there is no reasoning process. See Zabarella, de Methodis, lib. iii. cap. 5 sqq.

<sup>d</sup> The *Methodus Doctrinæ* is not in the same sense a process of inference from known to unknown; for the parts are supposed to be known already to the teacher, and are methodically arranged for the benefit of the learner. This then corresponds rather to Order than to Method in the proper sense. It may be an arrangement either of the whole or of a portion of a subject; and is thus either universal or particular. Cf. Zabarella, de Methodis, lib. ii. cap. 20. The distinction between the Perfect and Imperfect Method is not usually recognised by writers on the subject. Aldrich is thinking of the *acroamatic* and *exoteric* teaching of Aristotle and others; the characteristic feature of the latter being the suppression of certain doctrines as not fitted for a promiscuous audience. Whereas the universal and particular Methods merely relate to the whole and the parts in the same exposition.

1. *Compositoria* sive *Synthetica*\*, quæ inservit disciplinis Theoreticis; et a notione *Subjecti* incipiens, principia ejus et species investigat, donec a summo genere in ista disciplina perveniat ad infimam speciem†. 2. *Resolutoria* sive

An. Post.  
I. 7. 1.  
I. 10. 4.  
Eth. Nic.  
1. 2. 5.

Eth. Nic.  
VI. 13. 10.  
VII. 9. 4.  
Metaph.  
VI. 7. 6.

\* On Synthesis and Analysis, and the various employment of both, some remarks will be found in the Appendix, note F. The notion of Synthesis in the present passage corresponds to that of Metaphysical parts and whole, which has been mentioned as applicable to a syllogistic process from a general principle to its particular applications. Not so that of Analysis; which in the present passage is also a process from the universal to the particular, not from the particular to the universal. By *Subjectum* is meant the most general Subject whose properties the Science investigates; as Magnitude in Geometry. The *Principia* are the ἀρχαὶ ἐξ ὧν, or axiomatic principles, from which the demonstration commences. *Species* are the subdivisions of the general Subject; as the square, the triangle, &c. Cf. Anal. Post. i. 10. 4. Πᾶσα γὰρ ἀποδεικτική ἐπιστήμη περὶ τρία ἐστίν, ὅσα τε εἶναι τίθεται (ταῦτα δ' ἐστὶ τὸ γένος, οὗ τῶν καθ' αὐτὰ παθημάτων ἐστὶ θεωρητική) καὶ τὰ κοινὰ λεγόμενα ἀξιώματα, ἐξ ὧν πρώτων ἀποδείκνυσσι, καὶ τρίτον τὰ πάθη, ὧν τί σημαίνει ἕκαστον λαμβάνει. On the position of these in demonstration, some remarks will be found in Appendix, notes B and H: see also Trendelenburg, Erläuterungen, p. 118.

† “Exemplum evidens in primis est in scientia physica, ubi primum tractatur de corpore naturali in genere, deque affectionibus ejus et principiis; post descenditur ad species corporis naturalis, videlicet corpus simplex, cœlum, elementum; post mixtum, idque iterum vel imperfecte mixtum, vel meteora; post perfecte mixtum, idque iterum vel inanimatum, ut metalla, mineralia, vel animatum, idque vel vegetans, ut planta, vel sentiens: idque iterum vel irrationale, ubi tractantur omnia animalia bruta: vel rationale, ut homo; atque ita a summo genere ad species infimas devenitur. Eadem methodus observatur in mathematica et physica.”

*Analytica*<sup>s</sup>, quæ inservit disciplinis Practicis; et a notione *Finis* incipiens, subjectum, et tandem media investigat<sup>h</sup>.

Keckermann, Syst. Log. lib. iii. Tract. ii. cap. 1. Cf. Zabarella, de Meth. lib. ii. cap. 7.

<sup>s</sup> The Analytic, as well as the Synthetic Method, observes a deductive order from premises to conclusion. Its name then refers, not to the metaphysical relations of Species and Genus as whole and part, but to that common illustration of Aristotle's, by which, in productive or practical operation, the product or end is represented as a whole, and the materials or means as parts. The order of teaching will be the same as that of deliberation; the reverse of that of operation. The following passages may illustrate the image. Eth. Nic. iii. 5. 11. ἀλλὰ θέμενοι τέλος τι, πῶς καὶ διὰ τίνων ἔσται σκοποῦσι, καὶ διὰ πλείωνων μὲν φαινομένου γίνεσθαι διὰ τίνος ῥᾶστα καὶ κάλλιστα ἐπισκοποῦσι, δι' ἐνὸς δ' ἐπιτελουμένου πῶς διὰ τούτου ἔσται κάκεινο διὰ τίνος, ἕως ἂν ἔλθωσιν ἐπὶ τὸ πρῶτον αἴτιον, ὃ ἐν τῇ εὐρέσει ἔσχατόν ἐστιν· ὁ γὰρ βουλευόμενος ἔοικε ζητεῖν καὶ ἀναλύειν ὥσπερ διάγραμμα . . . καὶ τὸ ἔσχατον ἐν τῇ ἀναλύσει πρῶτον ἐν τῇ γενέσει. Eth. Nic. vi. 13. 10. οἱ γὰρ συλλογισμοὶ τῶν πρακτῶν ἀρχὴν ἔχοντές εἰσιν, ἐπεὶ δὴ τοιόνδε τὸ τέλος καὶ τὸ ἄριστον. vii. 9. 4. ἐν δὲ ταῖς πράξεσι τὸ οὐ ἕνεκα ἀρχὴ ὥσπερ ἐν τοῖς μαθηματικοῖς αἱ ὑποθέσεις. An example of the deliberative and practical processes will be found, Metaph. vi. 7. 7.

By *subjectum* is meant the *subjectum operationis*, or *materia circa quam*, more properly called the *object*; by *media*, the means by which out of this matter the end is produced. In building, e. g. the house is the *end*; the materials the *subject*; the act of building, *the means*. In Ethics, as treated by Aristotle, happiness is the *end*; man the *subject*; virtue the *means*.

<sup>h</sup> Exemplum evidens methodi analyticæ ab Aristotele in Ethicis proponitur, ubi libro primo *finis* præcognoscitur, scilicet felicitas; post *subjectum*, nimirum hominis appetitus, seu voluntas, et intellectus; sequentibus libris *media* traduntur, per quæ finis introducitur, videlicet virtutes theoreticæ et practicæ." Keckermann, Syst. Log. lib. iii. tr. 2. cap. 1.

Regulæ Methodi generales hæ sunt. In tradenda disciplina 1. Nihil desit aut redundet. 2. Singulæ partes inter se consentiant. 3. Nihil tractetur quod non sit subjecto aut fini homogeneum. 4. Singulæ partes aptis transitionibus connectantur.

5. Præcedat in docendo, sine quo alterum intelligi non potest, ipsum vero sine altero potest.

§. 2. IN tradendis disciplinis suis Mathematici hac utuntur methodo. 1. *Vocum significationem* constituunt: h. e. *Vocabula artis* suo quodque loco sic definiunt, ut legem sibi statuunt iis nusquam uti, præterquam in eo sensu quem explicat definitio. 2. Definitionibus subjungunt *Axiomata*, quas et *κοινὰς ἐννοίας* vocant<sup>i</sup>; h. e. effata sponte perspicua, quibus in decursu operis utendum vident. 3. Posthæc adjiciunt *Postulata*, quæ ad praxin spectant; suntque per se certa et evidentia; quæ proinde sine probatione concedi suo jure *postulant*. 4. Hisce positis, propositiones demonstrant; ordine, et, quoad fieri potest, affirmate: una lege contenti, ut, quicquid demonstratum eunt, ex ante

<sup>i</sup> The *κοινὰς ἐννοίαι* of the mathematicians correspond to the *ἀξιώματα* of Aristotle. The latter term is not used by Euclid; nor by any of the early Mathematicians in its Aristotelian sense. Among the Stoics, axiom was synonymous with proposition, and in this sense it is mentioned in a passage of Apuleius, quoted p. 36, note a. For a full history of the term and its several uses, see Sir W. Hamilton's note, Reid's Works, p. 764.



dati vel probati manifestum faciant. Cætera, in quibus methodi præceptores multi sunt et odiosi, non morantur.

Mathematicorum methodum in cæteris artibus et scientiis, si tenere non liceat, æmulari certe licet. Quo ad hanc quæque proprius accedit, eo cæteris perfectior, et ad docendum aptior videtur. Sed ad ea quæ docentur retinenda, nihil est utilius absoluti operis conspectu; in quo, ea quæ sunt ante (extra ordinem fortasse) demonstrata, suis quæque in locis, h. e. servata Logicorum methodo, reponantur.

## APPENDIX.

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### *Solutio Sophismatum*\*.

§. 1. CUJUSCUNQUE Syllogismi difficultas ad duas Species revocari poterit; alteram, quæ in *Argumenti Materia*, alteram, quæ in *Forma* consistit: nam qui has duas expedire noverit, is in tertia, quæ ex ambarum complexione oritur, non hærebit.

Si inciderit *Materia* difficilis, unicum huic malo <sup>Soph.</sup> <sup>Elench.</sup> <sup>9. 1.</sup> remedium est, disciplinam unde desumitur argumentum, fideliter didicisse: quod ut facias, *Instrumenti* operam tibi Logica præstabit; sed ulterius

\* The examination of Fallacies is extra-logical, except when the consequence is formally invalid; in which case it may be detected by the ordinary rules of syllogism. The following Sophisms are not all susceptible of this solution. Some are material fallacies, arising from ambiguity of language or falsity of assertion. But they are not treated of by Aristotle as belonging to the Science of Logic, but to the Art of Dialectic, of which, as has been before observed, a considerable portion is material. In fact, Aristotle's Treatise *περί σοφιστικῶν ἐλέγχων* is merely an account of the pseudo-refutations principally in use among the Sophists of his day, whether depending upon equivocal language, false assumption, or illogical reasoning.

nihil confert. Proprium illi munus est Syllogismi Formam explorare; h. e. Utrum Conclusio ex Præmissis consequatur propter ipsum Colligendi modum: Sed an ponendæ sint Præmissæ (nisi forte sint pure Logicæ) aliunde discendum est. Sicubi autem Syllogismus qui legitimus non est, videatur tamen; aut contra; (quorum utrumque sæpissime, et de causis pene infinitis accidit) Formalem ejus Consequentiam excutere est Artis Logicæ.

An. Pr. I.  
32. 8.

Qui hoc opus aggreditur, id sibi negotii datum sciat, ut Difficilem suum Syllogismum, primo in Categoricalum purum, vel in plures, si opus sit, convertat; tum ad Canonem accurate exigat; cujus operis ratio præcedente Libro abunde declarata est. Summa rei huc redit. Consideranda est primo Conclusio; ejusque Termini solerter distinguendi: Prædicatum enim est Major Terminus Syllogismi; qui proinde Præmissam quoque Majorem indicabit; Subjectum pariter Minorem; et in utraque sese offeret Argumentum sive Terminus Medius: Unde et si desit Præmissarum alterutra, facile suppleri poterit. Hisce cognitis, nec Figura Syllogismi, nec Modus latebit; qui si legitime, nec tamen vere concludere videatur, quærendum annon anceps sit aliquis trium Terminorum? nam si in iis nulla lateat ambiguitas, necessario falsa erit altera Præmissarum.

Hunc in modum licebit Syllogismum quemvis Categoricalum purum explorare; qualis si non sit

qui proponitur, quam facillime fiet, per ea quæ priore Libro, extremo Capite tertio, et toto quarto sunt ostensa. Siquid amplius restet, id Exemplis melius quam Præceptis docebitur.

§. 2. ORDIEMUR autem a facillimis; nempe <sup>Soph. Elench. 4. 1.</sup> veterum Sophistarum *Fallaciis*; quarum 13 species enumerat Aristoteles; sex, quæ *multiplicitate dictionis*; septem, quæ aliquo *extra dictionem* vitio laborarent<sup>b</sup>. Et erat aliqua fortasse difficultas in

<sup>b</sup> Of the Aristotelian division of Fallacies into *οἱ παρὰ τὴν λέξιν* and *οἱ ἔξω τῆς λέξεως*, Archbishop Whately observes, that it has not hitherto been grounded on any distinct principle: he therefore adopts a conjectural explanation, according to which the former are interpreted as logical Fallacies, in which the conclusion does not follow from the premises; the latter, as material Fallacies, where the conclusion does follow, the falsehood being in the assumption. This, however, is not the ancient principle of distinction, which is stated, with more or less clearness, by several Logicians. To go no higher than Sanderson; we find, "Fallacia omnis in dictione oritur ex dictionis aliqua multiplicitate. Est autem Multiplex aliud actuale: quando dictio invariata multa significat; ut in *æquivocatione*, et *amphibolia*. Aliud potentiale: quando dictio quoad prolationem aliquo modo variata, multa significat; ut in *compositione*, *divisione*, et *accentu*. Aliud phantasticum: quando dictio unum reipsa significans, videtur tamen multa significare; ut in *figura dictionis*. Fallaciæ extra dictionem sunt in quibus contingit deceptio, non tam ex multiplici aliquo latente in vocibus ipsis, quam ex ignoratione rerum." This principle is found in Alexander of Aphrodisias, Scholia, p. 298, b. 28.; and still earlier, if the work be genuine, in the Treatise *περὶ τῶν παρὰ τὴν λέξιν σοφισμάτων*, ascribed to Galen. Indeed it may be gathered from Aristotle himself; Soph. Elench. 4, 1. 6, 2. 7, 3. Occam states the

earum aliquibus, juxta veterem disputandi (h. e. interrogandi) morem propositis; sed profecto nemo tam obtusus est, qui non easdem Syllogistice propositas agnoscat statim, et derideat. V. g. Erit fortasse qui rogatus *Quod non amiserit utrum habeat necne?* non intelligat se captum iri, sive simpliciter habere se, sive non habere responderit: at proposito hujusmodi Syllogismo, *Quod non amisisti habes; Cornua non amisisti; Ergo habes: Vel Quod non amisisti non habes; Oculos non amisisti; Ergo non habes;* quid reponat nemo non videt.

distinction still more clearly. "Fallaciæ in dictione sunt illæ penes quas secundum omnes modos peccant sophistica argumenta composita ex signis voluntarie institutis. Fallaciæ extra dictionem sunt illæ penes quas peccant argumenta tam composita ex signis voluntarie institutis quam composita ex signis naturaliter significantibus." Logica, iii. 4. cap. 1. The former arise from defects in the arbitrary signs of thought, and hence are frequently confined to a single language. The latter are in the thought itself, whether materially, in the false application of notions to things, or formally, in the violation of the laws by which the operations of the reason should be governed. Under this head are thus included both false judgments and illogical reasonings. These Fallacies are connected with language only secondarily and accidentally; the former primarily and essentially. See further, Waitz, vol. ii. p. 532.

Fallaciæ *dictionis*, sive *in dictione*, sex sunt <sup>c</sup>.

§. 3. 1. FALLACIA *æquivocationis*, sive nata ex <sup>Soph.</sup>  
voce *æquivoca*: ut, *Canis est animal; Sirius est* <sup>Elench.</sup>  
*canis*; Ergo, *Sirius est animal*. In hoc quatuor  
sunt termini; quorum duo, vox *Canis* *æquivoce*  
sumpta.

2. Fallacia *amphiboliæ*; sive nata ex sententia <sup>Soph.</sup>  
*amphibola*, h. e. ancipitis structuræ; ut *Quod tan-* <sup>Elench.</sup>  
*gitur a Socrate illud sentit; Columna tangitur a*  
*Socrate*; Ergo *Columna sentit*. Vox *sentit*, non  
sponte, sed in hac structura est ambigua; cujus  
vi, in Majori significat *Sentit Socrates*; in Con-  
clusionione, *Sentit Socratem*: Quare Syllogismus  
habet quatuor terminos.

3. 4. Fallacia *Compositionis* <sup>d</sup>, ubi datum in sensu <sup>Soph.</sup>  
<sup>Elench.</sup>  
<sup>4. 6. 20. 1.</sup>

<sup>c</sup> With the following account of the Fallacies may be compared the corresponding chapter in the Rhetoric, ii. 24. In doing so, however, it must be remembered, that the present sophisms occur in a disputation carried on in colloquial form between antagonists, and conforming to established rules; whereas those are introduced *ad libitum* by an Orator in the course of his speech. Hence, though the principle of deception may be similar, the manner of its application will not always correspond. The same caution is still more necessary in examining modern specimens of Sophistry.

<sup>d</sup> This Fallacy, as treated by Aristotle, includes a wrong composition of clauses in a sentence capable of two punctuations. In this extension, the examples *possibile est sedentem stare*, &c. are easily included under Composition; the sense varying according as *sedentem* is joined with *possibile est*, or with *stare*. The Fallacy of Division, in like manner, will include the separation of clauses which ought to be united.

Soph.  
Elench.  
4. 7. 20. 1.

diviso sumitur in sensu composito; ut, *Duo et Tria sunt Par et Impar: Quinque sunt Duo et Tria; Ergo Quinque sunt Par et Impar.* Fallacia *Divisionis*, quando datum in sensu composito sumitur in diviso; ut, *Planetæ sunt septem: Sol et Luna sunt Planetæ; Ergo Sol et Luna sunt septem.* Utroque modo quatuor sunt termini si aperte loquaris. V. g. Prioris Syllogismi mens est, *Duo et Tria seorsim accepta* sunt Par et Impar. Quinque sunt Duo et Tria *in unum composita*, &c. Posterioris vero, Planetæ *collective sumpti* sunt septem; Sol et Luna sunt Planetæ *distributive sumpti* &c. Unde duplex utrobique Medius.

Soph.  
Elench.  
4. 6. 20. 4.

“Huc referri solent hujusmodi Orationes; *Possibile est album esse nigrum; Possibile est sedentem stare*: dubito an satis recte; quia tanto acumine non est opus. Potest quidem album fieri nigrum; et Possibile est *sedenti* stare; at si hæc velles, incongrue locutus es. Utraque igitur Oratio est simpliciter neganda; vel ut aperte falsa si sit congrua, vel si non sit congrua, quia non est Propositio.”

Soph.  
Elench.  
4. 8. 21. 1.

5. Fallacia *Accentus* seu *Prosodiæ* potius, quando pro eodem sumuntur quæ vel Litera, vel Spiritu, vel Tempore, vel Accentu sunt diversa: ut, *Est servus Ergo est cervus; Est ara Ergo est hara.*

• The *Fallacia Prosodiæ*, as Aristotle observes, is a Fallacy in writing only, not in speaking. *Lépores* and *lepóres* have no ambiguity when rightly pronounced. The first example (*servus ergo cervus*), supposing the pronunciation of both words to be the same, is not properly an instance of this Fallacy.

Est *malum* (an apple) Ergo *malum* (an evil).  
Venatur *lépores* Ergo et *Lepôres*; quibus qui falli  
potest, debet.

6. Fallacia *Figuræ dictionis*, quando propter <sup>Soph.</sup>  
dictiones similes, quod de uno datur de altero <sup>Elench.</sup>  
arripitur: idque vel *Grammaticæ*<sup>1</sup>, ut *Musa* est  
Fœminini generis, Ergo et *Poeta*: vel *Logice*, ut  
*Docere est agere*, Ergo et *Videre*. Hæc Materia  
potius quam Forma peccat: et operose solvi non  
postulat: ponit aliquid aperte falsum; quo negato  
evertitur.

<sup>1</sup> *Grammaticæ*, i. e. inferring that *Poeta* is of the feminine  
gender, because the majority of words with the same termina-  
tion are so. *Logice*, inferring that *videre* belongs to the  
category of *ποιεῖν*, because most infinitive moods of this form  
are included under it.

The natural form in which this Fallacy would be stated is  
that of an induction, or rather a number of examples, after  
the manner of Socrates. Indeed, this very sophism is put  
into the mouth of Socrates by Aristophanes, *Nubes*, 681 sqq.  
Stated in this form, the logical inconsequence is obvious; as  
also if it is reduced to syllogism. "Such and such words are  
feminine; *Musa resembles* such and such words." Here  
there is no middle term. This ambiguity is sometimes  
called *multiplex phantasticum*. Cf. Petr. Hisp. Summ. Log.  
Tract. vi. "Est autem multiplex phantasticum, quando aliqua  
dictio significat unum et videtur significare aliud propter  
similitudinem quam habet in parte cum alia dictione; ut *videre*  
significat passionem, et videtur significare actionem, propter  
hoc quod est simile huic verbo, *agere*." But the Fallacy would  
seem more naturally to belong to those *extra dictionem*.

In Rhet. ii. 24. 2. Aristotle gives another form of this  
Fallacy; viz. when a series of detached propositions are so  
enunciated as to appear logically connected, not being  
really so. See also Soph. Elench. 15. 5.



Soph.  
Elench.  
4. 10.

Fallaciæ *extra dictionem* sunt septem<sup>a</sup>.

Soph.  
Elench.  
5. 1. 24. 1.

§. 4. 1. FALLACIA *Accidentis*<sup>b</sup>; quando *accidentarium* aliquod confunditur cum eo quod est *essentiale* seu principaliter intentum: ut, *Quod emisti comedisti, Crudum emisti; Ergo Crudum comedisti*: in quo, *Quod emisti*, et *Quale emisti*, confunduntur; unde quatuor termini.

Soph.  
Elench.  
5. 2. 25. 1.

2. Fallacia a *Dicto secundum Quid ad Dictum Simpliciter*; quando proceditur a voce determinate sumpta, ad eandem absolute positam: ut, *Æthiops est albus dentes; Ergo albus*: unde quatuor esse Terminos necesse est<sup>i</sup>.

Soph.  
Elench.  
5. 5. 26. 1.  
An. Pr. II.  
20. 1.  
Soph.  
Elench.  
1. 4.

3. Fallacia *Ignorationis Elenchi. Elenchus*<sup>k</sup>

<sup>a</sup> Fallacies *extra dictionem* embrace all those in which the deception arises from any other cause than ambiguity of language; whether from a false assumption in the premise, or from the reasoning being unsound. Purely logical fallacies belong not to the *in dictione*, but to the *extra dictionem*.

<sup>b</sup> The example of this Fallacy given by Aristotle is, Coriscus is different from Socrates; Socrates is a man; therefore Coriscus is different from a man. The Fallacy lies in assuming that whatever is different from a given subject is incompatible with all the predicates (*τὰ συμβαίνοντα*) of that subject. The reasoning is thus illogical, Socrates is a man; Coriscus is not Socrates; therefore Coriscus is not a man.

<sup>i</sup> The example as stated by Aristotle will run thus; *Æthiops non est albus; Æthiops est albus dentes; Ergo, qui est albus non est albus*. Here there are four terms, and the Conclusion, as Aristotle himself observes, is not drawn *sylogistically*.

<sup>k</sup> The Elenchus is defined by Aristotle, *συλλογισμὸς ἀντιφάσεως*, An. Pr. ii. 20. 1. Soph. Elench. 6. 4. The *Ignoratio Elenchi* consists in neglecting some of the conditions required by the rules of Dialectic for proving the contradictory of any given proposition. This is the case when the conclusion does

proprie Syllogismus est Adversarium redarguens: confirmando scil. quod illius sententiæ contradicat. Quare in hanc incidit Fallaciam qui se putat Adversarium redarguere, non servatis *Contradicendi Legibus*, (de quibus vide pag. 46.) Qui in his peccat, docendus est se nescire Quid sit Contradicere.

4. Fallacia *a non-causa pro causa*<sup>1</sup>; sive sit a Soph. Elench. 5. 11. 29. 1. An. Pr. II. 17. 3. *non-vera pro vera*; sive a *non-tali pro tali*<sup>m</sup>: ut

not logically follow from the premises; or when the premises themselves are not admitted by the opponent; or when the conclusion, though legitimately deduced from allowed premises, is an apparent, not a real, contradiction of the opponent's position, failing in one of the four conditions of contradiction, viz. *eodem modo, secundum idem, ad idem, eodem tempore*. In this extended sense, every fallacy is an Ignoratio Elenchi, as is observed by Aristotle, *Soph. Elench. 6. 1.* though the name is especially applied to the last instance.

<sup>1</sup> This fallacy, according to Aristotle, most frequently occurs in the *deductio ad impossibile*, and consists in pretending that the proposition which we wish to refute is the cause of the false conclusion, which in reality follows from other premises; i. e. in maintaining that the conclusion is false because *that particular assumption* is false. This mode of deception has place in dialectical disputation, from the practice of asking the opponent to grant certain premises. An unnecessary proposition is asked and granted among the rest, and afterwards selected as the false assumption. Aldrich's examples refer rather to the rhetorical than to the dialectical form of this fallacy. In this the speaker is guilty merely of a false assertion, attributing a certain effect to a wrong cause. See *Rhet. ii. 24. 8.*

<sup>m</sup> In the *non vera pro vera*, there is no connexion between the effect and the supposed cause; in the *non tali pro tali*, there is a connexion but an insufficient one; wine, e. g. does not intoxicate except in certain quantity. This instance,

*Cometa fulsit; Ergo Bellum erit; Nullo modo; nam si fuerit, aliis de Causis futurum est. Quod inebriat prohibendum est; Vinum inebriat; Nequaquam vero, sed Abusus vini. Hæc Fallacia bene solvitur negando Causam falsam; melius, adducendo germanam.*

“Huc refertur ab aliquibus (qua de causa non video) hoc Sophisma; *Qui magis esurit, plus comedit; Qui minus comedit, magis esurit; Ergo Qui minus comedit, plus comedit.* Sed qui hoc, vel hujus simile attulerit (ut innumera afferri solent) docendus est congrue loqui: Hoc si fecerit dicet in hoc casu *Qui magis esurit plus comedet; Qui minus comedit, magis esurit; Ergo Qui minus comedit, plus comedet.*”

Soph.  
Elench.

5. 8. 28. 1. 5. Fallacia *Consequentis*<sup>n</sup>, quando infertur quod non sequitur: ut, *Animal est; Ergo, Est Homo.* Hic memineris, quod si recte ratione uti volumus, Consequentia aut directa, immediata, formalis, aut plane nulla est; peccat enim contra aliquam Dialecticæ regulam; ad quam si provoces, refelletur.

however, more properly belongs to the fallacy *a dicto secundum quid ad dictum simpliciter*. “Wine (in excess) intoxicates; therefore, Wine (absolutely) is to be forbidden.”

<sup>n</sup> The *fallacia consequentis* is an error in reasoning, as may be clearly seen in the examples given Soph. Elench. 5. 8. and Rhet. ii. 24. 7. e. g. Honey is yellow; Gall is yellow; therefore gall is honey. Here the middle term is undistributed. Another specimen cited by Aristotle is the reasoning of Melissus; “Whatever is generated has a beginning; the universe is not generated; therefore it has not a beginning.” Cf. Phys. Ausc. I. 3. 2. Here there is an illicit process of the major term.

6. Fallacia *Petitionis Principii*<sup>o</sup>, cum ut datum Soph. Elench. 5. 7. 27. 1. Anal. Pr. II. 16. 1. Top. VIII. 13. 1. assumitur, quod probatum oportuit. V. g. Cum probatur aliquid vel per seipsum, (quæ vocatur *Petitio statim*,) ut, *Homo est*, Ergo, *est Homo*: Vel per Synonymum; ut *Ensis est acutus*; Ergo, *Gladius*: Vel per æque ignotum; ut *Hic est Pater Melchisedek*; Ergo, *Hæc Mater*: Vel per ignotius; ut, *Hoc Quadratum est hujus Trianguli duplum*, Quia *huic Circulo æquale*: Vel per Circulum; resumendo scilicet quod relictum est; ut si diceres, *Ignis est calidus* Ergo *urit*: et post pauca, *Ignis urit* Ergo *est calidus*.

7. Fallacia<sup>p</sup> *plurium interrogationum*, quando Soph. Elench. 5. 13. 30. 1. plures quæstiones velut una proponuntur; v. g. *Suntne Mel et Fel dulcia? Estne homo animal et lapis?* Evertitur, ad singulas questiones distincte respondendo; sicut fecit Menedemus Eretriensis qui rogante eum Alexino, *Numquid Patrem verberare desiisset?* *Nec verberavi*, inquit, *nec desii*<sup>q</sup>.

Atque hæ sunt tredecim Sophismatum formulæ<sup>r</sup> Veteribus usitatiores, quæ Tironibus Logicis in exemplum proponi solent, Poterant esse pauci-

<sup>o</sup> On the *Petitio Principii*, see Appendix, note D. Aristotle enumerates five varieties; which, however, are not the same as those given by Aldrich. See Top. viii. 13.

<sup>p</sup> This is merely a dialectical fallacy; and consists in entrapping an opponent into an answer partly false, by artfully putting two questions as one.

<sup>q</sup> Diog. Laert. ii. 135.

<sup>r</sup> These thirteen fallacies are comprised in the mnemonic lines,

Æquivocat, Amphi. Componit, Dividit, Acc. Fi.

Acci. Quid, Ignorans, Non causa, Con. Petit. Interr.

ores; nam videntur aliquæ coincidere; et præterea tres, *Non-causa pro Causa*, *Petitio Principii*, et *Plures interrogationes*, non sunt Fallaciæ propriæ dictæ, h. e. Syllogismi Forma peccantes<sup>\*</sup>; sed Vitia male Opponentis. Poterant et plures<sup>†</sup>; sed cum hic numerus Aristoteli satisfacisset, idem omnibus post illum Logicis satisfacit.

§. 5. SOPHISMATIBUS ex sententia veterum accensendæ sunt *Inexplicabiles* (ut vocantur) *Rationes*, quas Megarici, Stoici, aliique Eristicam professi, propriis nominibus insignivere, *Crocodilus*, *Mentiens*, *Obvelutus*, &c. quas plerasque collegit Gassendus, et retulit in *Libro de Origine et Varietate Logicæ*: Nos eodem fere ordine explorabimus quo ab illo sunt propositæ.

Arist. Phys.  
Ausc. VI.  
9. 3.  
Top. VIII.  
8. 2.  
Soph.  
Elench.  
24. 5.

1. ACHILLES vocatur Argumentum quo usus est Zeno Eleates, non ut Motum tolleretur, quod vulgo sed falso dicitur; sed ut ostenderet Continuum non esse infinite divisibile, quia hoc dato Motus tolleretur. Argumentum sic se habet. Sit Achilles quantum voles *πόδας ὠκύς*, puta decuplo velocior

\* Aristotle's definition of Fallacy will include logical deductions from false premises, as well as illogical deductions from any premises. See Top. i. 1. 3. 'Εριστικός δ' ἐστὶ συλλογισμὸς ὁ ἐκ φαινομένων ἐνδόξων, μὴ ὄντων δέ, καὶ ὁ ἐξ ἐνδόξων ἢ φαινομένων ἐνδόξων φαινόμενος Aldrich's limitation to Syllogisms faulty in form is quite arbitrary.

† Aristotle does not profess to give a complete enumeration of the fallacies; but only a list of such as may be solved by the Dialectician. There may be innumerable false assumptions, on matters not belonging to Dialectic, which must be refuted from the principles of the Science or Art to which they belong. See Soph. Elench. 9. 1.

Testudine. Quiescente illo, confecerit Testudo partem aliquam (puta decimam) spatii percurrendi. Tum procedat Achilles, idemque spatium percurrat: progredietur interim Testudo per partem ejus decimam, h. e. totius spatii centesimam; hanc conficiat Achilles, et percurret interim Testudo hujus centesimæ decimam; et sic deinceps in infinitum; quo fiet ut Achilles nunquam assequatur Testudinem<sup>a</sup>.

<sup>a</sup> Archbishop Whately evades the difficulty of Zeno's argument, by observing, that it cannot be exhibited in a Syllogism. But this confession is in fact a surrender of the syllogistic criterion, as a means of discriminating between sound and unsound reasoning. On the contrary, nothing is easier than to exhibit the reasoning in a Syllogism, and to shew thereby that the fallacy does not lie in the form, but in the matter. Thus, representing the whole space to be traversed by a.

"Any space equal to  $\frac{a}{10} + \frac{a}{100} + \frac{a}{1000}$  &c. is infinite, (being the sum of an infinite series). The space to be passed before Achilles overtakes the tortoise is equal to this sum. Therefore it is infinite."

The whole mystery of this famous fallacy lies in this, that *the major premise is false*. The sum of an infinite series may be, and in this case is, finite.

It may be observed, that Aldrich is mistaken as regards Zeno's object in this Sophism. It was proposed to support the leading tenet of Parmenides, of the unity of all things, by shewing that the identity of rest and motion is a necessary result from the contrary opinion. It does not appear, however, that Zeno advanced this argument seriously. His principal design was to retort the ridicule which had been thrown on the doctrine of Parmenides, by involving his opponents in the same absurdities which they professed to find in his theory. Cf. Plato, Parm. p. 128. Arist. Soph. Elench. 10. 2. 33. 4. Cousin, Nouveaux Fragments, Zénon d'Elée.

Ineptum est hoc Sophisma. 1. Quia solvitur ambulando; quod fecit Diogenes\*. 2. Quoniam ex ipsa Hypothesi, Dum Testudo quæ præcessit spatio A, conficit  $\frac{7}{10}$  A, Achilles conficiet 2 A; adeoque statim assequetur eam, et antecedit†. Sed hoc (inquies) in casu proposito nunquam fiet; Recte; Ne enim fiat, in ipso proponendi modo clam inseritur nova conditio. Nam 3. Argumentum aliis verbis hoc dicit; Si Achillem decuplo velociorem præcesserit Testudo; et *uterque meo pergat arbitratu*; Ego perficiam ne Achilles assequatur Testudinem: Quare prorsus nunquam assequetur. Quæ est *Fallacia a dicto secundum quid, ad dictum simpliciter*.

2. Diodorus Cronus, quod Sophismata Stilponis non solvisset, exinde ὄνος appellatus est‡; id cog-

\* The solution of Diogenes proves nothing. Zeno contends that reason contradicts the evidence of the senses. Diogenes replies that the evidence of the senses contradicts that of reason. Who denied that?

† The futility of this attempt at solution might have been learned from Aristotle, Soph. Elench. 24. 5. It only shews that the contradictory assertion rests also on seemingly valid reasoning; whereas the duty of the opponent is to shew where the fallacy of Zeno's reasoning lies.

‡ The facetious Iambics in which Diodorus was thus "writ down an ass" are as follows:

Κρόνε Διόδωρε, τίς σε δαιμόνων κακῇ  
 Ἀθυμία ξυνείρυσεν  
 Ἴν' αὐτὸς αὐτὸν ἐμβάλης εἰς τάρταρον,  
 Στίλπωνος οὐ λύσας ἔπη  
 Αἰνιγματώδη; Τοιγὰρ εὐρέθης Κρόνος  
 Ἐξω γε τοῦ ῥῶ κάππα τε.

See Diog. Laert. ii. 112.

nominis aliunde promeritus, quod ad hunc modum contra Motum disputaret. *Mobile movetur vel in quo est loco, vel in quo non est; At neutrum horum; Ergo Non omnino.* Unde facete illum lusit Herophilus, qui ut luxatum illi humerum restitueret rogatus, *Tuus (inquit) humerus vel in quo erat loco existens excidit, vel in quo non erat. Sed neutrum horum; Ergo non omnino.* Diodori argumento breviter et perspicue respondet Gassendus, Quod movetur moveri *a loco* in quo erat, *per locum* in quo est (sive quem pertransit), *ad locum* in quo nondum est, sed futurum est.

3. RECIPROCUM vocat Argumentum *Gellius*, quod Græce dicitur *Ἀντιστρέφον*: cui illustrando conficta est Fabula quæ Græcorum vanitatem olet. Narrant enim inter Protagoram et Euathlum, vel (ut facetiæ locus sit) inter Coracem\* et Tisiam convenisse, ut hunc ille Dialecticam doceret; idque hac lege, ut dimidium mercedis statim acciperet; reliquum, cum discipulus causam vicisset. Primam exinde litem cum Discipulo contestatus est Magister, cum mercedis reliquum lege peteret; apud Judices vero sic agebat: *Ego si vicero, Tisia, Tu solves ex sententia, sin minus, ex pacto; utroque igitur modo solvendum est.* Respondit Tisias, *Ego nihil solvo; Tu si viceris, ex pacto; sin minus, ex*

\* The story is told of Protagoras and Euathlus by Aulus Gellius, v. 10. and by Apuleius, Florid. iv. 18.; of Corax, by Sext. Empir. adv. Math. p. 81. Cf. Menag. ad Diog. Laert. ix. 56.



*sententia.* Tanto utrinque acumine perculsi boni iudices, exclamarunt *Κακοῦ Κόρακος κακὸν ὄν*, causamque in longissimum diem distulerunt.

Ineptum erat Coracis Dilemma quia potuit tam bene retorqueri. Nihilominus callide agebat, si id Iudices vidissent. Nam cum mercedem inique peteret, causa cadere debebat; Quamprimum autem cecidisset, ei merces ex pacto debebatur.

Soph.  
Elench.  
25. 3.  
Eth. Nic.  
VII. 3. 8.

§. 6. 4. MENTIENS qui est Græce *Ψευδόμενος*<sup>b</sup>, Chrysippi Syllogismus ne ab ipso quidem solutus, præter cæteros insolubilis habetur. Eum Cicero<sup>c</sup> sic enuntiat: *Si dicis Te mentiri, et verum dicis, mentiris; Sed dicis Te mentiri, et verum dicis; mentiris igitur.*

Congrue loquere, Chrysippe, et intelliges Te vel nihil prorsus, vel nihil dicere difficile. Qui se dicit *mentitum*, et verum dicit, *mentitus est*; *Qui mentiturum, mentietur.* Horum utrumque verum est, et nemini obscurum; Sed qui ut verum simul dicat et mentiatur dicit unum aliquid, cujus partes sibi invicem contradicunt, is nec verum, nec falsum, sed omnino nihil dicit: quando enim sententiæ pars una evertit alteram, tota nihil prorsus significat, sed inaniter strepit.

<sup>b</sup> This Fallacy is attributed to Eubulides of Miletus. See Laert. ii. 138.

<sup>c</sup> Acad. Quæst. iv. 30. Its solution is obvious. No one can lie without lying about something. The something is not stated in the sophism. The question as it stands is unmeaning. Is this thing very like? Like what?

Subtilius disputare videbantur qui sic agebant. *Cretenses esse mendaces dicit Epimenides Cretensis. Mentitur igitur; Ergo Illi sunt veraces; Ergo et Ille verum dicit; Ergo Illi rursus sunt mendaces &c.* Sed profecto nihil stultius est hoc Argumento, nisi vox *Cretenses* eos ad unum omnes significet, et Omnis mendax quicquid dicit mentiatur.

Videtur hic *Mentiens* peperisse subtilem illam Scholasticorum *de Insolubilibus* doctrinam. “Nam talia argumenta (inquit *Occam*) non possunt fieri “nisi quando actus humanus respicit istum terminum *Falsum*, vel aliquem consimilem affirmative; “vel hunc terminum *Verum*, vel aliquem consimilem “negative<sup>d</sup>.” Esse hæc *Sophismata* ante dixerat; nec vocari *Insolubilia*, “quia nullo modo solvi “possunt, sed quia cum difficultate solvuntur.”

Insolubilis exemplum sic proponitur. Incipiat Socrates sic loqui, *Socrates dicit falsum*; et nihil amplius loquatur: tum interroget aliquis, utrum vera an falsa sit hæc propositio. Respondeo, nec veram nec falsam esse, sed nihil significare, nisi aliquid aliud respiciat, quod a Socrate ante dictum supponitur. Qui enim profert hæc verba, *Socrates dicit falsum*, fert iudicium de dicto Socratis; qui que fert iudicium, necessario præsupponit aliquid de quo iudicet: Unde cum sententia præsupponat objectum suum, clarum est eandem numero propositionem, et sententiam et ejus objectum esse non posse. Quare et Scholarum subtilitas hic nihil

<sup>d</sup> Occam, Logica, iii. 3. cap. 45.

proficit; nihilque opus est plura dicere de Insolubilibus.

5. FALLENS Διαλανθάνων\*, vel ut alii Διαλεληθῶς, de Juramento ludit sicut *Mentiens* de nuda affirmatione. E. g. *Qui jurat se falsum jurare et falsum jurat, vere jurat.* Quare eodem fere modo quo *Mentiens* explicatur.

Soph.  
Elench.  
24. 2.

§. 7. 6. 7. OBVELATUS, alio nomine ELECTRA, est *Fallacia a dicto secundum Quid, ad dictum Simpliciter*. Nam colligere pertendit, quod et Patrem Filius et Soror Fratrem, h. e. Electra Orestem prorsus nesciat, si eundem *velo obductum* se nescire fateatur†.

8. 9. ACERVALIS et CALVUS‡, sunt ejusdem Sophis-

\* The διαλανθάνων is probably a similar Fallacy to the Electra and the Obvelatus. The honour of its invention is divided between Eubulides and Diodorus Cronus. The example given by Aldrich is a mere conjecture of Gassendi's.

† The Fallacy of the Electra is founded on Sophocles, Elect. 1222. It is given as follows by Lucian, Vit. Auct. §. 22. παρεστῶτος γὰρ αὐτῇ τοῦ Ὁρέστου ἔτι ἀγνώτος, οἶδε μὲν Ὁρέστην, ὅτι ἀδελφὸς αὐτῆς· ὅτι δὲ οὗτος Ὁρέστης, ἀγνοεῖ. The Obvelatus is of similar character. ΧΡΥΣ. Ἦν σοι παραστήσας τινὰ ἐγκεκαλυμμένον, ἔρωμαι, τοῦτον οἶσθα; τί φήσεις; ΑΓΟ. Δηλαδή ἀγνοεῖν. ΧΡΥΣ. Ἀλλὰ μὴν αὐτὸς οὗτος ἦν ὁ πατὴρ ὁ σός, ὥστε εἰ τοῦτον ἀγνοεῖς, δῆλος εἰ τὸν πατέρα τὸν σὸν ἀγνοῶν. Another variety of the same sophism will be found in Aristotle, Soph. Elench. 24. 2. where it is classed under the *Fallacia Accidentis*. Diogenes Laertius, ii. §. 108. attributes the *Electra* and *Obvelatus* to Eubulides, as well as the *Acervus*, *Cornutus*, and *Calvus*.

‡ These two Fallacies, which are in fact but one under different names, are alluded to by Horace, Ep. ii. 1. 45. and by Persius, Sat. vi. 80. The *Acervus* is frequently called

matic duo tantum Exempla. V. g. Si rogatus a Sophista, neges te *Calvum* fieri amisso crine uno, duobus, tribus, et sic deinceps ad 99, sed amissis centum concedas; vel eodem modo neges 99 grana *Acervum* esse, centum autem esse fatearis; concludet ille grano unico adjecto *Acervum* fieri; crine unico amisso, *Calvitiem*. Facile autem respondetur, *Unum centesimum* non esse *Unicum*; nam est *Unum* cum nonaginta novem. Vel si mavis sic; Fit *Acervus*, grano uno, sed adjecto; adeoque non unico, sed cum pluribus aliis. Fit *Calvities* crine uno, sed post multos alios, amisso.

10. CORNUTUS et *Ceratinus*, *Ceratine*, *Ceratis*, et *Ceras* dicitur Sophisma illud ante memoratum, *Quod non amisisti habes* &c. Quæ est *Petitio Principii*; nam supponit Te cornua habuisse.

Ineptissima hæc Fallacia plus acuminis præfert juxta veterem Disputandi modum rogando proposita. Erit enim fortasse, qui rogatus, *Quod non amiserit, utrum habeat necne?* non intelligat se captum iri, si simpliciter respondeat; sive habere se, sive non habere dicat. Nam eum adiget Sophista, ut vel se habere Cornua, vel non habere Oculos fateatur.

11. Acutus sibi videbatur Menedemus (Eretriensis scil. quem *ἐπιστικώτατον* appellat Laërtius) quum ad hunc modum nugaretur. *Diversum, a Diverso Diversum est; Prodesse est a Bono Di-*

*Sorites*, (cf. Cic. Acad. Quæst. iv. 48.) but must not be confounded with the series of syllogisms of the same name.

*versum ; Prodesse igitur non est Bonum*<sup>h</sup>. Quæ est crassa et putida *Æquivocatio* ; et nihil amplius.

§. 8. 12. CROCODILUS<sup>i</sup> a Chrysippo inventus, qui ad Fallaciam Consequentis revocari poterit, sic proponitur. *Surripuerat infantem Crocodilus ; redditurum se, hac lege pollicitus, ut divinet mater, utrum apud se reddere an non reddere constituerit.* Si dicat mater *Non reddere* ; mentietur si infantem receperit : Si dicat *reddere* ; non reddet quia hoc est falsum. Quamobrem Chrysippus nihil esse putat difficilius quam responsum matri suggerere. Nec injuria, si lubricum putet divinare ; sed im merito, si in hoc (ut videtur) hæreat, Quod si puerum Crocodilus non reddere constituerit, quamvis id Mater divinaverit non reddet : quasi consilium quod primum intenderat Crocodilus, postquam indicatum est, repudiare non possit, et ex pacto non debeat : nam si Mater recte divina verit, recepto puero, non mentitur illa, sed consilium mutat Crocodilus.

13. METENS *Θερίζων* qui vocatur, ita placuit Zenoni Stoico, ut Sophistæ a quo eum didicerat duplum pactæ mercedis numeraret. Proponente Ammonio sic se habet. *Si messurus es, non fortasse metes, fortasse non metes, sed metes omnino ; Pariter, si non messurus es, non fortasse metes, fortasse non*

<sup>h</sup> Diog. Laert. ii. 134.

<sup>i</sup> This Fallacy is given at length by Lucian, Vit. Auct. §. 22.

*metes, sed prorsus non metes. Atqui vel metere te, vel non metere, necessarium est; perit igitur Fortasse, quod in neutra hypothesi locum habet. Fortunatum Sophistam! qui mercede dupla hunc fumum vendidit; Vel hoc, vel illud evenire est necesse; Quare hoc et non illud necessario eventurum est. Nihil amplius dicit qui sic dixerit, Ut vel metas vel non metas est necesse: Ergo Vel necessario metes vel necessario non metes. Breviter, hæc Fallacia Divisionis est; nam in Antecedente, Modus Necessario, non tribuitur nisi toti Disjunctivæ; sed in Consequente dicitur de ejusdem membris seorsim acceptis.*

14. IGNAVA RATIO vel Ἀργὸς λόγος appellatur<sup>†</sup>, qui si valeat nihil est omnino quod agamus in vita. V. g. *Si Fatum est ægroto convalescere, sive medicum adhibuerit sive non adhibuerit, convalescet: Pariter, si illi Fatum est non convalescere, sive medicum adhibuerit, sive non adhibuerit, non convalescet: et alterutrum Fatum est; medicum ergo adhibere nihil attinet.* Lepide respondit Chrysippus posse esse *Confatalia* adhibere medicum et convalescere: Quemadmodum et Zeno, quando servum furem verberabat, *Furari sibi Fatum esse* dicenti, et *Vapulare* respondit. Sed commodius dici videtur, Si sit Fatum, hoc valere argumentum; idque vel solum sufficere ne Fatum esse concedamus. Argumentum hocce et quæ præcedunt pp. 126, 127. N°. 2. et 3. ex Dilemmatis legibus facile solvuntur.

<sup>†</sup> See Cicero, de Fato, c. 12.

§. 9. PLURA sunt apud Autores Inexplicabilium Rationum nomina; quorum exempla Gassendus quia nusquam invenisset, ipse reperit. Verum ea relinquimus studiosis; quibus etiam consulto est relictum, ut quæ sunt hactenus explicata, illi explicent in Syllogismos conversa. Exempla Gassendi ne desiderent qui libro carent, non pigebit exscribere.

*Dominans Κυριεύων.* Themistoclis filius nec Græcis imperat, nec de imperando cogitat: Verum imperat Matri, quæ imperat Themistocli, qui Græcis imperat; *Dominatur* itaque Græcis, *et non-dominatur.*

*Conficiens Πεπαίνων.* Multum itineris *conficit*, *et non conficit* Canis, qui in rota gradiens totum diem, ex eodem tamen loco non recedit.

*Superpositus* vel *Superlativus* Ὑπερθετικὸς, Soriti forte affinis; Ut si roges quota sit palea, quæ si mulo *super-imponatur* ille oneri succumbat?

*Nullus Οὐτις.* Homo in Communi nec est hic, nec ille, nec alius homo singularis, Ergo *Nullus*<sup>1</sup>. Vel ut tritum Sophisma: *Quod Ego sum, Tu non*

Soph.  
Elench.  
22. 12.

<sup>1</sup> This sometimes appears in another form, as one of the various expositions of the celebrated fallacy of the *tertius homo*, alluded to by Aristotle, Soph. Elench. 22. 12. Metaph. i. 9. 3. It is given as follows by Alexander, Schol. p. 314. b. 42. In the proposition, *ἄνθρωπος πεπαταί*, the subject is not the Platonic *αἰτεώανθρωπος*, who is immovable, nor yet any individual man; therefore there is a third man, distinct from the Idea and from the individuals. Cf. Scholia, p. 567. a. 41. Alex. in Metaph. p. 62. ed. Bonitz. Brandis, de perditis Aristotelis libris, p. 18.

*es; Ego sum homo; Ergo Tu non es. Vel denique ut Chrysippus. Qui est Megaris, non est Athenis; Homo est Megaris; Ergo Homo non est Athenis.*

Subjicit Gassendus ex Laërtio, has Chrysippi Rogatiunculas. 1. Qui non initiatis indicat mysteria, impie agit. Sed hoc facit Hierophantes; *Ergo* Impie agit. 2. Est quoddam caput; Id Tu non habes; *Ergo* Caput non habes. 3. Id quod loqueris ex ore tuo egreditur: Currum loqueris; *Ergo* Currus ex ore tuo egreditur.

§. 10. Non temperaturos sibi Juvenes satis scio quin dissiliant risu, ubi hæc tam futilia intellexerint a gravissimis Philosophis serio fuisse proposita; et Veteribus adeo difficilia haberi, ut Philetas Cous præceptor Ptolemæi Philadelphi solius *Mentientis* explicandi studio confectus interierit. Quamvis autem Aristotelis beneficio, videantur ista ut sunt levia, in iis tamen prompte atque artificiose solvendis non inutiliter sese Juvenes exercebunt: nam in gravissimis Disputationibus, hæc eadem recocta Novæ præsertim Philosophiæ cultores sæpissime reponunt.

V. g. *Gassendus* Vacuum quod appellat *disseminatum* eodem fere Sophismate demonstrare perterritit, quo olim Zeno *contra motum* utebatur: Suamque *Hobbius* de *Necessitate* sententiam iisdem propugnat Fallaciis quibus *Fatum* Stoici: aliaque plurima hujus generis, quæ sunt Nobis prætereunda, studiosis inter legendum occurrent.



Fefellit Virum satis alias perspicacem hæc sequela, quæ in Ambiguis distinguendis versatum minime (opinor) fefellisset; *Possum datæ peripheriæ trientem exhibere; Possum igitur datam peripheriam trisecare*: cujus falsitatem ipsa Praxis redarguit; neque enim trientem exhibuit, sed alterius circuli peripheriam trienti parem: h. e. non *trientem* ipsum, sed *trientis valorem*: Paria fecisset qui oblatum sibi solidum trisecturus, ne attrectato quidem solido porrexisset drachmam.

§. 11. VOLENTEM hic desinere pungit scrupulus, qui nonnullos hodie Mathematicos male habet. Nam in Demonstrationibus quibusdam, Conclusionem ex sui Contradictoria, per legitimas necessariasque consequentias directe inferri volunt. Quod si ita sit, miror a Veteribus, præsertim Scepticis non fuisse animadversum; quippe hoc dato tota ruat Logica necesse est.

Dicunt tamen Theodosium demonstrasse quod *si Maris superficies non est Sphærica, est Sphærica*. Verum ille nihil tale demonstravit; sed tantum Maris superficiem *si nondum esset, fore Sphæricam*: siquid enim emineat (inquit) illud statim, ex natura humidi, subsidet: Unde si Maris superficies sit (ut non est) inæqualis, *fiet* perfecte Sphærica.

Videamus aliud Exemplum. Sunt numeri duo inæquales, et inter se primi; Dico quod eorum differentia ad minorem prima est. *Esto enim numerus aliquis qui metitur minorem; idemque*

metiatur differentiam : Ergo metitur eorum summam ; Ergo metitur majorem, huic summæ parem ; *Ergo non metitur minorem.*

Possum hoc loco dicere quod mendose colligitur ; siquis enim numerus minorem metiatur ex supposito, et majorem ex demonstrato ; colligendum erat *datos esse inter se compositos, quod est contra Hypothesin.* Verum ne pluribus exemplis sim molestus, malo generale responsum. Dico igitur, Quod nulla hujusmodi Demonstratio supponit solam suæ Conclusionis Contradictoriam ; sed quælibet cum Contradictoria ponit aliquid quod eam evertit ; et evertere, demonstrando ostendit. Quare Conclusionem non infert ex ejus Contradictoria ; sed ex Contradictoria cum Contradictoriæ ever-siva : quod si faciat nihil mirum. Nam *Si Socrates v. g. est homo, et irrationalis, tum Si est homo, non est homo :* Et *Si Socrates est mortuus, et scit se esse mortuum, tum Si est mortuus non est mortuus :* Et Universaliter, *Si et hæc est vera et quæ hanc evertit :* tum *Si hæc est vera, non est vera :* quibus omnibus inest una quæ est prorsus nulla difficultas. Ubi enim Hypothesis evertit suppositionem, quidni ex Hypothesi sequatur, quod Suppositioni contradicit ?



## APPENDIX.

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## APPENDIX.

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### NOTE A.

#### ON THE PREDICABLES.

It has been already observed that the ordinary logical account of the Predicables, even in its least objectionable form, as it occurs in the Isagoge of Porphyry, cannot be consistently maintained, except upon Realist principles. By this is meant, that there are portions of that account altogether untenable, except on the supposition that Genera and Species are not mere conceptions of the human mind, but have an independent existence in Nature. Whether they are to be regarded as existing separately, as in the Platonic theory of ideas, or in the individuals, according to the view sometimes attributed to Aristotle, (for both these opinions had their advocates among the Schoolmen\*,) is in this respect immaterial; though it may be observed by the way, that of the various modifications to which Realism has at different times been subjected, the Platonic hypothesis is by far the most consistent and intelligible. The

\* Both were early, almost simultaneous, developments of the scholastic Realism, appearing as soon as the Nominalism of Roscelin compelled the antagonist doctrines to assume a definite form. The Platonic theory was advocated by Bernard of Chartres; the other, ultimately the prevailing doctrine, found its earliest scholastic supporter in William of Champeaux.

points which may be considered as especially demanding the Realist hypothesis are,

1. The admission, under any definition, of an *Infima Species*.

2. The definition frequently adopted of such Species, as being the whole essence of the individuals of which it is predicated.

3. The assumption that every such Species has one absolute differentia, convertible with the Species, and serving to distinguish it from every other.

It is not asserted that these views were held by none but professed Realists. The first, indeed, may be traced to Aristotle, who has by different writers been regarded as a Realist, a Conceptualist, and a Nominalist, in the strictest sense<sup>b</sup>; it is also to be found in Porphyry, who in the commencement of his treatise proclaims himself neutral; and it was subsequently adopted by the scholastic Nominalists<sup>c</sup>. The second is held by Boethius, who, as far as he had any definite views, rather inclines to Conceptualism<sup>d</sup>; and the third, though not formally established in the schools till the time of Aquinas, was afterwards adopted by Nominalists and Realists indifferently<sup>e</sup>. But this does not prove the compatibility of the doctrines, but only the inconsistency of their holders. The Realist, when pressed to declare why he has fixed the *Infima*

<sup>b</sup> See Hamilton on Reid, p. 405.

<sup>c</sup> Abelard, ed. Cousin, p. 537. Occam, Logic, pt. i. chap. 21.

<sup>d</sup> Boethii Opera, p. 72.

<sup>e</sup> The Porphyrian definition of man, "Animal rationale mortale," was adopted by the earlier Schoolmen, Abelard, Albertus Magnus, and Petrus Hispanus; though sometimes with the saving clause, that it must be understood with reference to the Stoical notions of the Gods. Aquinas was the first who expelled the Genus *animal rationale* from the Arbor Porphyriana, and, limiting rationality to men, distinguished Angels as *intellectuales*. Cf. Summa, P. i. Qu. lviii. 3. Opusc. xlviii. Tract. 1. cap. 4. Tract. 2. cap. 3.

*Species* at *Homo*, has an obvious and sufficient answer. I did not make the world, he might say; Substances, universal as well as singular, exist independently of me; I state facts as I find them, and am not bound to determine why they are so. But let a Conceptualist or Nominalist<sup>f</sup> talk of a Lowest Species, and he is refuted at once by his own fundamental doctrine. The several Species are our own creation, as abstract ideas, or as significations of words. You have no right arbitrarily to declare that you will form complex conceptions thus low and no lower; or, at least, if you fix such limits for your own convenience, you have no right to impose the same restriction on others.

The same remarks apply to the theory of an absolute differentia, such as *rationale*, predicable of all men and of none but men, and serving to distinguish that species, not from some other given species, but from all others whatever. Porphyry, as has been before observed, ad-

<sup>f</sup> Between Nominalism and Conceptualism there is no real difference, unless in conjunction with the latter we maintain the power of the mind to form Universal notions, unaided by verbal or other symbols. And even then, all Nominalism will be Conceptualism, though all Conceptualism will not be Nominalism. For Universals can only be identified with names by considering these as the signs of notions. Yet Nominalism has been accused as destructive of all Philosophy, and that by the advocates of Conceptualism. But the fundamental error of Hobbes and his followers is not their doctrine of Universal *Terms*, but their Theory of the import of *Propositions*. The two, however, are not necessarily connected. We may adopt Locke's theory of abstract ideas, without maintaining with him that knowledge is the perception of the agreement or disagreement of two ideas; and we may hold that general notions require the aid of language, without maintaining with Hobbes, that truth and falsehood depend on names, or with Condillac, that science is only a language well constructed. But, not to argue this point here, we may observe, that the Scholastic Nominalists, at least Abelard and Occam, were Conceptualists. With regard to Roscelin, it is hardly fair, upon the slight notices we possess of his views, to identify his Nominalism with that of Hobbes, whom Leibnitz rightly calls, *plusquam Nominalis*. No one can suppose Abelard's *deductio ad absurdum* to be a fair statement of Roscelin's views.



mits only a *relative* differentia. His definition of man is ζῷον λογικὸν θνητόν; *rational* being the differentia of man when compared with brutes; *mortal*, when compared with the Gods<sup>a</sup>. But if either of these attributes be selected as the differentia of man *absolutely*, we must again have recourse to Realism to justify the position. If species are made by Nature, they may have been so framed that each has a peculiar characteristic shared by no other. How this can be proved to be the case is another question; but there is no *à priori* impossibility in the supposition. But if the species is but a conception formed by the mind, what is to hinder us from forming three complex notions, *abc*, *abd*, *acd*, of which no part is a differentia absolutely and *per se*, though *c* distinguishes the first from the second, and *b* the first from the third?

With regard to the doctrine of the Infima Species being the *whole essence* of the individuals of which it is predicated, the case is still clearer; inasmuch as this language was expressly maintained by the Realists, and expressly repudiated by the Nominalists. It is true that it is previously to be found in Boethius; but here his authority is of little value, as nothing can be more vacillating than his opinions on the whole question. Boethius wrote his Commentaries with the design of reconciling Aristotle with Plato; he succeeded only in contradicting himself. In one of his expositions of Porphyry he goes beyond Plato in Realism; in the other, he is a professed Conceptualist<sup>b</sup>. But even had his views been more definite in favour of the latter hypothesis, it would only shew that he admitted details into his system inconsistent, if pushed to their ultimate consequences, with its main positions.

In treating the doctrine of Predicables, two alternatives are open to the modern Logician. Either he

<sup>a</sup> Isagoge, iii. 19.

<sup>b</sup> Cousin, Ouvrages d'Abélard, Introduction, p. 66.

may take the scholastic language as he finds it, and explain it with reference to the theories on which it was originally founded; warning, however, at the same time his readers or hearers, that the supposed real essences are deserving of the same amount of belief as the Deities of Heathen Mythology, or the Sylphs, Gnomes, and Salamanders of the Rosicrucians: or he may adopt a theory of Universals in conformity with views current in modern philosophy, and remodel the whole account of the predicables, so as to make it consistent therewith. But any attempt at a compromise between the two, any explanation of ancient language upon modern hypotheses, can produce nothing but inconsistency in the Teacher and confusion in the Pupil. In the first place, such explanation, even where most satisfactory, is founded merely on analogy, and hence will rather shew what the doctrines expounded ought to have been, according to modern criticism, than what they actually were. In the second place, the analogy in some important particulars will fail entirely, and the exceptional cases must either by some unnatural distortion be forced under the given classification, or be excluded altogether, to the serious detriment of the completeness of the theory.

To adopt then the first mode of explanation. We will suppose that Genera and Species are *substances*, having a real existence independently of us, and cognisable as to their nature, no matter how, by the human mind. Of these universal substances, some are more extensive, others less so, the limits at both extremities being fixed by nature, and the numbers in each degree settled and unalterable. The higher enter into the composition of the lower, the lowest not contributing to form any other Universal, but susceptible of Accidents, from which union are formed various individuals. Man, for example, is a

lowest species: to this are added certain accidental modifications which form Socrates, and at the same time others which form Plato. These modifications excepted, there is nothing in Socrates which is not at the same time in Plato, nor in Plato, which is not at the same time in Socrates<sup>1</sup>. Moreover, from these Universal Substances, or rather from the distinctive portion of each, certain qualities *flow*, or are produced as effect from cause. Others, not connected by causation, are found in the individuals of this or that Species, some universally in all, others partially, in some individuals only.

From a series of assumptions of this kind, the exposition of the Realist doctrine of Predicables is easy. And this, or some other of the various phases of Scholastic Realism, must of necessity be assumed, if our intention is to explain an old theory, not to construct a new one.

On the other hand, we have the modern Logician expounding somewhat in the following style. Genera and Species have no existence *a parte Rei*, but are notions formed by the mind from observing certain points of similarity in different individuals. But similarity must not be confounded with identity. The image and superscription on two coins may present no discernible marks of distinction from each other; but if on that account we say that they are *the same*, we employ the word in an equivocal sense, which must be carefully distinguished from that in which we say that both are

<sup>1</sup> "Homo quædam Species est, res una essentialiter, cui adveniunt formæ quædam et efficiunt Socratem: illam eandem essentialiter eodem modo informant formæ facientes Platonem et cætera individua hominis; nec aliquid est in Socrate, præter illas formas informantes illam materiam ad faciendum Socratem, quin illud idem eodem tempore in Platone informatum sit formis Platonis. Et hoc intelligunt de singulis speciebus ad individua et de generibus ad species." Abelard, de Gen. et Spec. ed. Cousin. p. 513. This was the first doctrine of William of Champeaux. Other expositions of Realism might be given,

struck from the same die. In the latter sense, the attributes forming the humanity of Socrates are not the same with those forming the humanity of Plato; though the common notion *man* embraces both, and though by availing ourselves of an ambiguity of language, we say that both are of *the same* species.

General notions thus framed by the mind, when expressed in language, form common terms. And the various attributes comprehended<sup>k</sup> in every such notion are its essence<sup>l</sup>. By this we do not mean any thing necessary to the physical existence of an object; but merely that, as general notions are formed from the observation of similar attributes in individuals, every individual must possess such attributes, if it is to be included under the extension of the notion and called by the corresponding common name. Proper names, on the contrary, have no essence, as they have no general notion belonging to them, but are mere arbitrary marks imposed for the purpose of distinguishing individuals from each other.

But though our earliest complex notions may have been gained from real objects, there is no reason why

<sup>k</sup> In a Pamphlet published under the name of "A Dissertation on the Heads of Predicables," I inadvertently adopted Mr. Mill's expressions of *connotation* and *denotation*, to distinguish between the attributes contained in a complex notion, and the subjects of which it is predicated. The distinction I still regard as most important, and one that is not perhaps sufficiently marked in modern language; but further study of the scholastic phraseology has led me to regard Mr. Mill's language as too wide a departure from the original use of the terms. For this reason I have preferred the expressions *Comprehension* and *Extension*, as better sanctioned by Logical authority. Cf. Port Royal Logic, P. I. chap. 6. "J'appelle *comprehension* de l'idée, les attributs qu'elle enferme en soi. J'appelle *étendue* de l'idée, les sujets à qui cette idée convient." For the Scholastic Connotation, see p. 13, note f.

<sup>l</sup> This is the *Nominal Essence* of Locke, which corresponds to the Logical Essence of other philosophers, though variously explained according to their different Metaphysical theories. The term *Real Essence* is used by the same philosopher to denote that generally unknown constitution of things on which their sensible properties depend.

such notions alone should be admitted in a theory of Predication. Such a theory only distinguishes the several relations which the subject and predicate of a proposition may bear to each other. With the objective existence of things corresponding to our general notions, we have for the present no concern. Whatever theory may be adopted as to the origin of our ideas, there can be no doubt that we have the power of forming combinations in the mind, which have not been observed to exist in nature<sup>m</sup>. And the relation of subject and predicate in propositions into which such notions enter, may be identified with some of the relations of other notions.

In constructing or explaining a theory of Predication in conformity with these views, there is one ambiguity which it is not possible to avoid, without a coinage of new terms. The distinctions of Genus and Differentia must be gained by comparing two terms not predicable of each other. Compare, for example, Man with Brute, the common Genus will be Animal, the respective Differentiæ, Rational and Irrational. But there is no absolute Genus or Differentia, and frequently, while the whole comprehension of the notion remains the same, the Genus and Differentia may change places, according as it is compared with this or that other notion. In the comparison, for example, of a plane triangle with a parallelogram, "rectilineal figure" is its common, "having three sides" its distinctive part. But compare a plane with a spherical triangle, "having three sides" is common to both; the distinction being, that the sides in the one case are straight lines, in the other arcs of great circles. But when one only of the compared notions is employed as the subject of a proposition, and a portion of the attributes which it comprehends is predicated of it, that predicate cannot properly be called Genus or Differentia,

<sup>m</sup> Cf. Locke, Essay, b. ii. ch. 2. §. 2.

the comparison from which these distinctions arise having ceased.

With this proviso, we may adopt, *mutatis mutandis*, the classification of the Predicables given by Aristotle himself, as furnishing a more satisfactory groundwork than either the Isagoge of Porphyry, or its subsequent scholastic embellishments. Every Proposition, according to Aristotle, expresses one of four relations of the Predicate to its Subject; Genus, (under which may be included Differentia,) Definition, Property, or Accident<sup>a</sup>. For every Predicate must either be convertible with its Subject or not. If convertible, it either expresses the whole Essence (τὸ τί ἦν εἶναι) of the Subject or not. In the former case it is called Definition, in the latter, Property. If not convertible, it either expresses part of the Essence or not. In the former case it is Genus, in the latter, Accident.

This division, being founded on dichotomy by contradiction, must necessarily exhaust every possible mode of Predication. Interpreting the Essence, in accordance with our present view, as the sum of the attributes comprehended in a notion, we shall find all four members admissible where the Subject of the proposition has both *comprehension* and *extension*; i. e. is a complex notion containing attributes, and is predicable of existing objects. For its Predicate may either express a whole or a part of the attributes comprehended in the Subject, or else some attribute not so comprehended, but possessed by the objects of which the Subject is predicable. In the latter case, where the Subject and Predicate are

<sup>a</sup> See Topics, i. 8. Sundry attempts have been made, not very successfully, to reconcile this account with that of Porphyry. But though some license of interpretation may be allowed, when the object is to reconcile an author with himself, it is scarcely necessary to strain his language into agreement with a writer who lived more than six centuries after him, and who does not even profess to be commenting on him.

distinct in comprehension, they may be either equal or unequal in extension.

The two first cases will correspond to the class of Propositions called by Kant, Analytical Judgments, and by Mr. Mill, Verbal Propositions. In these we merely assert that the attributes composing the Predicate are a part or the whole of those composing the Subject. They depend solely on the principle of Contradiction. If Animal form part of the conception Man, Man is an Animal, or we have a contradiction in terms.

To avoid the introduction of new words, we may retain the Aristotelian nomenclature of Genus and Definition to express the relation of Predicate to Subject in these two classes of Propositions; though the former appellation, for the reason stated above, is not altogether free from objections. Under Definition may be also included a class of Propositions, which are not in the strict sense of the word Analytical<sup>o</sup>, and are not admitted by Aristotle to be Definitions proper; viz. those in which the Predicate is a single term synonymous with the Subject.

The last two cases will correspond to the Synthetical Judgments of Kant, and to the Real Propositions of Mr. Mill. In these, the Subject is neither a word nor a notion, but the several individual things of which a certain notion is predicable. For example, in the Proposition, "All men are mortal," we do not mean that the conception Man includes Mortality, but that the individuals possessing the attributes comprehended in the former notion possess also those comprehended in the latter.

In distinguishing a certain portion of these Propositions as predicating *Property*, we must divest ourselves altogether of the notion of necessary or contingent connexion, and regard the word purely as a translation of the Aristotelian ἴδιον. These Propositions assert not

<sup>o</sup> Though Kant admits even tautological propositions (A is A) as explicitly analytical.

merely that certain objects possess certain attributes, but that they alone possess them. "All equilateral triangles are equiangular," *may be* a proposition of this class. "All men are capable of understanding language," *may be* another. I say *may be*, because we cannot, from the mere form of the expression, determine whether a given Proposition is one of Property or Accident, so long as we use the same sign for the copula in both. For we are always at liberty to state a portion of the truth only; and sometimes a portion is all that we are on a particular occasion warranted in stating. A peculiar attribute will thus be enunciated merely as an attribute. The fifth Proposition of Euclid, for example, only authorizes us to state that all equilateral triangles are equiangular; and the sixth, that all equiangular triangles are equilateral. But when both these have been proved, we may combine the results into a single statement; and to avoid the ambiguity of the copula, we may substitute the symbol of equality; "All equilateral triangles = equiangular," or quantify the predicate by an universal sign, as, "All equilateral triangles are all equiangular<sup>p</sup>."

In the foregoing remarks, Genus and Definition express a relation of notions to notions, Property and Accident of attributes to things. Hence it will follow, that notions purely imaginary, i. e. confessedly predicable of no objects existing elsewhere than in the mind, can only, as such, be the subjects of analytical judgments. Proper names, on the other hand, having no essence, can only be the subjects of synthetical judgments. The former have no Properties or Accidents; the latter have no Genus or Definition.

<sup>p</sup> The former is recommended by the Author of the "Outline of the Laws of Thought," p. 67. I object to it only as a concession to that Mathematical method of exposition of which Mr. De Morgan's Logic is the full development; a method alike injurious to the science and repulsive to the learner.



*Species* is excluded from the Predicables, and confined to the *Species subjicibilis*, the correlative of the Predicable Genus. By this we avoid an inconsistency of which the majority of Logicians are guilty, in employing the term *Species* sometimes to express a relation of a Predicate to a Subject, sometimes that of a Subject to a Predicate.

A lowest *Species* will be admissible, as it implies a notion so complex as to be incapable of further accessions. It is true that, in the continual formation of *Species*, we may arrive at combinations of attributes not realised in Nature; but the classification of things is not the province of the Logician; nor has he a right to conclude *a priori* that the field of physical research is exhausted, or that notions now regarded as imaginary may not hereafter be discovered to be real. But whether such discovery be made or not, it will not affect the *relation* of two notions to each other. Even withip the field of reality, the ordinary limits are most arbitrarily fixed. Man is regarded as a *Species* to Animal, Philosopher is not regarded as a *Species* to Man. Yet what distinction can be drawn between the *relations* of these notions to each other? It is true that some classifications are far more important than others in Physical Science, and, relatively to particular Sciences, those species may be fixed as the lowest, at which the more numerous and important variations of phenomena terminate. In this sense, each Science may have its lowest species, at which its investigation of properties ceases<sup>1</sup>. But this limit cannot be acknowledged by the Logician. He knows nothing of the respective values of different physical classifications. That question must be determined by other Sciences, and even when determined will not affect the Logical relations of Subject and Predicate.

<sup>1</sup> See Mill's Logic, vol. i. p. 165.

## NOTE B.

## ON DEFINITION.

IN the notes to Aldrich's account of Definition, I have endeavoured to explain his language in conformity with the views most commonly found in Logical Treatises. But as these views differ in many respects from those of Aristotle, on which they are supposed to be founded, and as a correct account of the doctrines of that Philosopher will materially assist in the solution of more than one of those *vexatæ quæstiones* which are most perplexing to beginners in Logic, I shall attempt a somewhat fuller exposition here.

In the second Book of the Posterior Analytics, Aristotle mentions three different forms of Definition, in the following words: "Ἔστιν ἄρα ὁρισμὸς εἰς μὲν λόγος τοῦ τί ἐστὶν ἀναπόδεικτος, εἰς δὲ συλλογισμὸς τοῦ τί ἐστὶ, πρῶσει διαφέρων τῆς ἀποδείξεως, τρίτος δὲ τῆς τοῦ τί ἐστὶν ἀποδείξεως συμπέρασμα<sup>a</sup>. This passage is a concise summary of the whole Aristotelian theory of Definition. Adopting it as our text, we proceed to comment as follows.

A necessary preliminary to the determining the Real Definition of any object, (τί ἐστὶ,) is to ascertain that such object exists (ὅτι ἔστι). Otherwise our Definition will be merely a nominal one<sup>b</sup>. But we have two classes of definable objects, of which the existence is determined in two different ways, producing a corresponding variety in the form of the Definition.

<sup>a</sup> Anal. Post. ii. 10. 4.

<sup>b</sup> Anal. Post. ii. 8. 3. 'Ἀδύνατον εἰδέναι τί ἐστὶν, ἀγνοοῦντας εἰ ἔστιν. Ibid. ii. 7. 2. 'Ἀνάγκη γὰρ τὸν εἰδόμενον τὸ τί ἐστὶν ἄνθρωπος ἢ ἄλλο ὁτιοῦν, εἰδέναι καὶ ὅτι ἔστιν· τὸ γὰρ μὴ ὂν οὐδεὶς οἶδεν ὅ τι ἐστίν, ἀλλὰ τί μὲν σημαίνει ὁ λόγος ἢ τὸ ὄνομα, ὅταν εἴπω τραγέλαφος, τί δ' ἔστι τραγέλαφος ἀδύνατον εἰδέναι.

I. Attributes, under which term are included all things belonging to any other Category than that of Substance. These exist only in Substances as their subjects, and their existence is properly determined by *Demonstration*°. When ascertained in any other way, we are said to know it only accidentally<sup>d</sup>. In the Demonstrative Syllogism, the minor term is the Subject, the major the Attribute; the Cause, by virtue of which the Subject is thus affected, being the middle term. When by such a Syllogism we have proved that all A is B, we know that the attribute B exists in the subject A.

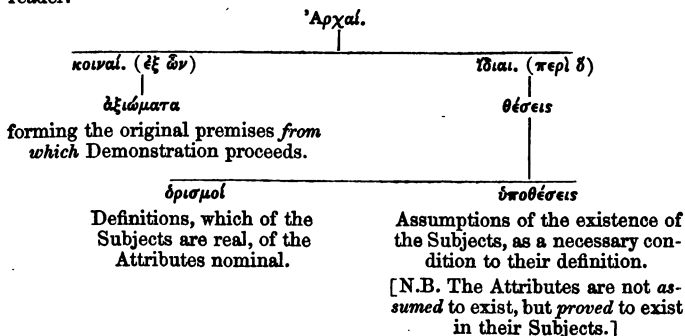
II. Substances, which exist not in a Subject, but *per se*°. Of such the existence cannot be proved, but must be *assumed*, before any of their Attributes can be demonstrated. This assumption, under the name of Hypothesis, forms one of the Aristotelian ἀρχαί, or Principles of Science, which must precede all Demonstration<sup>f</sup>.

° Hence the Scholastic maxim, *Accidentis esse est inesse*. Cf. Aquinas, Opusc. xlviii. de Syll. Demonst. ch. 11. I have preferred the term Attribute to Accident, inasmuch as the latter is frequently appropriated in a special sense to such Attributes as exist only contingently, and are therefore indemonstrable.

<sup>d</sup> Eth. Nic. vi. 3. 4. ὅταν γὰρ πως πιστεύῃ καὶ γινώριμοι αὐτῷ ᾧσιν αἱ ἀρχαί, ἐπίσταται· εἰ γὰρ μὴ μᾶλλον τοῦ συμπεράσματος, κατὰ συμβεβηκὸς ἔξει τὴν ἐπιστήμην.

° Categ. 5. 18. Κοινὸν δὲ κατὰ πάσης οὐσίας τὸ μὴ ἐν ὑποκειμένῳ εἶναι.

<sup>f</sup> The following table of the Principles of Science may be useful to the reader.



In some passages, speaking in a stricter sense, Aristotle declares Substances alone to be capable of Definition<sup>s</sup>; but in the wider sense of the term which prevails throughout the Posterior Analytics, it is applicable both to Substances and to Attributes. In both cases the inquiry into the Definition of a thing is identical with that into its Cause; with this distinction, that in the case of Attributes, the Cause is to be sought, not in the Attribute, but in its Subject; whereas in the case of Substances which exist *per se*, the Cause is to be sought in themselves only<sup>b</sup>.

Attributes are defined by the same cause which served as a middle term to prove their existence. This is the mode of Definition described as συλλογισμὸς τοῦ τί ἐστι, πτώσει διαφέρων τῆς ἀποδείξεως. As an example, he gives the definition of an eclipse. The moon is proved to be eclipsed, because the sun's light is intercepted by the earth. The same cause furnishes us at once with a middle term for demonstration, and with a definition of the attribute<sup>c</sup>. Why is the moon eclipsed? Because

See Anal. Post. i. 2. 7. i. 10. 1. i. 32. 6. and Sanderson's Logic, b. iii. ch. 11. From this it will be seen that Mr. Mill has unjustly accused Aristotle of maintaining that the science of Geometry is deduced from Definitions. (Mill's Logic, vol. i. p. 197.) Hence may also be explained the contradiction which Stewart professes to find in Aristotle's doctrines. (Elements, Pt. ii. ch. 3. sect. i.) The principles *from which* Aristotle demonstrates, are *Axioms*, of which he gives as a specimen, "If equals be taken from equals, the remainders are equal." The necessity of *assuming* the existence of the subject is maintained by Aristotle as clearly as by Mr. Mill. Cf. also Metaph. v. 1. 2. x. 7. 2.

<sup>s</sup> e. g. Metaph. vi. 5. 5. Cf. Metaph. vi. 4. 12.

<sup>b</sup> Anal. Post. ii. 2. 5. ὥσπερ οὖν λέγομεν, τὸ τί ἐστὶν εἰδέναι ταὐτό ἐστι καὶ διὰ τί ἐστὶν. Τοῦτο δ' ἡ ἀπλῶς καὶ μὴ τῶν ὑπαρχόντων τι, ἢ τῶν ὑπαρχόντων. Anal. Post. i. 24. 6. ὅ γὰρ καθ' αὐτὸ ὑπάρχει τι, τοῦτο αὐτὸ αὐτῷ αἴτιον.

<sup>c</sup> The reduction of this Demonstration to syllogistic form has been variously attempted. The following is given by Aquinas, Opusc. 38. "Omne corpus naturale, illuminatum a sole, privatum luce a terræ objectu deficit; luna est hujusmodi, ergo luna deficit." A more general, and so far preferable, major premise, is given by Crakanthorpe, Log. lib. iv. cap. 4.

the sun's light is intercepted by the earth. What is an eclipse? An intercepting of the sun's light from the moon by the earth. Thunder in the same way is defined, *ἀπόσβessis πυρός ἐν νέφει*, the answer to the question *διὰ τί βροντᾷ*; being *διὰ τὸ ἀποσβένυσθαι τὸ πῦρ ἐν τῷ νέφει*.

This kind of definition, as has been observed, differs from a demonstration in the position (*θέσις*) of its terms<sup>i</sup>; for it has the same terms (*ἔκλειψις*, *ἀντίφραξις*, *σελήνη*,—*βροντή*, *ἀπόσβessis πυρός*, *νέφος*), but not in the same order, and with some variety of grammatical form (*πτῶσις*<sup>k</sup>).

The Definition, then, of an Attribute is to be found in its Cause. But the Aristotelian Philosophy recognises four Causes, and sometimes more than one of these is concerned in the production of the same effect. Which of these is to be taken as the Definition? In Anal. Post. ii. 11. Aristotle shews that any one of the four may be used as a middle term in demonstration; but it by no means follows that each may be a Definition of the major term. On this point, Aristotle's opinion is not decidedly

"Omne corpus illuminatum ab alio, inter quod et corpus illuminans opacum corpus sic interponitur, ut umbra opaci corporis operiat et comprehendat corpus illuminatum, eclipsatur seu privatur suo lumine."

<sup>i</sup> The Definition is by some given as "an obscuration of light in the moon, caused by the interposition of the earth." But in this case, the major term of the Demonstrative Syllogism is not "eclipsed," but "obscured." If these two terms are synonymous, the Definition is merely nominal, and the latter part superfluous; if not, we do not define the attribute demonstrated (obscuration), but another (eclipse), contained under it as species under genus. I interpret Aristotle's words as referring to the complex form of the Definition, as given in question and answer, or in a proposition—*τί ἐστιν ἔκλειψις; ἀντίφραξις ἐπὶ γῆς· ἡ ἔκλειψις ἐστιν ἀντίφραξις ἐπὶ γῆς*. So the third form of Definition mentioned An. Pr. ii. 10. resembles the conclusion of a Demonstration, as containing, in the same form, only the major and minor terms, (*βροντή*, *νέφος*) *ἡ βροντή ἐστὶ ψόφος ἐν νέφει*. Aristotle's text is not decisive, the one view being rather supported by ch. 8. the other by ch. 10. The question is by no means unimportant; the attempt to reduce these Definitions to a pseudo-Genus and Differentia has fostered a grave error, which will be noticed hereafter.

<sup>k</sup> Pacius and Waitz consider *πτῶσις* and *θέσις* to be synonymous.

expressed, but it seems probable that he regarded the *formal cause* only as available for the purposes of Definition. For a material cause, properly speaking, has no place in attributes, but only in physical substances<sup>1</sup>; and that which in the former is most nearly analogous to matter, viz. the necessary condition out of which the effect arises, may in such cases be identified with the formal cause. This Aristotle allows in the chapter in question, when he states that the material cause there instanced as a middle term is in fact the same as the formal<sup>m</sup>. The efficient and final causes seem to be excluded, as not being contemporaneous with their effects, so that from the existence of the one we cannot certainly infer that of the other<sup>n</sup>. Whereas the formal cause is expressly distinguished as τὸ τί ἦν εἶναι<sup>o</sup>; and the examples given of it in Anal. Post. ii. 12. 1. correspond exactly to those previously given as Definitions. The other causes only accidentally serve the same purpose, in those instances in which they coincide with the formal<sup>p</sup>.

<sup>1</sup> Metaph. vii. 4. 6. Περὶ μὲν οὖν τὰς φυσικὰς οὐσίας καὶ γεννητὰς ἀνάγκη οὕτω μετιέναι, εἴ τις μέτεισιν ὁρθῶς, εἴπερ ἔρα αἰτιά τε ταῦτα καὶ τοσαῦτα, καὶ δεῖ τὰ αἰτία γνωρίζειν. Ἐπὶ δὲ τῶν φυσικῶν μὲν αἰδίων δὲ οὐσιῶν ἕλλος λόγος. ἴσως γὰρ ἓνια οὐκ ἔχει ὅλην, ἢ οὐ τοιαύτην ἀλλὰ μόνον κατὰ τόπον κινήτην. Οὐδ' ὅσα δὴ φύσει μὲν μή, οὐσίῃ δέ, [sc. ὑπάρχει] οὐκ ἔστι τοῦτοις ὅλη ἀλλὰ τὸ ὑποκείμενον ἢ οὐσία. Ὅσον τί αἰτίων ἐκλείψεως, τίς ὅλη; οὐ γὰρ ἔστιν, ἀλλ' ἢ σελήνη, τὸ πάσχον.

<sup>m</sup> See Anal. Post. ii. 11. 3.

<sup>n</sup> See Anal. Post. ii. 12. 3, 4. and Waitz, Org. vol. ii. p. 411.

<sup>o</sup> Anal. Pr. ii. 11. 1. Metaph. i. 3. 1.

<sup>p</sup> See Rassow, "Aristotelis de Notionis Definitione Doctrina." p. 16. A very different view has been taken by some Logicians. Crakanthorpe, for example, maintains that Demonstration can only be, "a causa efficiente per emanationem, vel a causa efficiente per externam actionem, vel a causa finali;" and he devotes a chapter to shewing that neither the Material nor the Formal cause can be a middle term in Demonstration, though the efficient cause of the Attribute may be the formal cause of the Subject. A similar view is maintained by Sandersen, lib. iii. cap. 15. But

We have next to consider the Definitions of Substances. Here too the investigation of cause is the root of the whole inquiry; but the manner in which it is conducted is not at first sight so obvious as in the former case. To ask the cause of an attribute, is to ask why the subject is so affected. Why, for example, is the moon eclipsed? But what is meant by the *cause* of a man, and in what form will the question be proposed? To ask why man exists, is in fact to ask why there are such beings in the world,—a question admitting only of Grangousier's solution<sup>3</sup>,—and when so solved, contributing nothing towards the Definition. To ask why a man is a man, is, as Aristotle himself observes, futile<sup>1</sup>. The only form in which the question can be put is, Why is this or that individual a man? What are the essential constituents of the notion Man, the possession of which entitles Socrates to be reckoned in the class? Here too the formal cause determines the Definition.

These Definitions form the first of the three kinds distinguished in Anal. Post. ii. 10. 4. Ἔστιν ἄρα ὁρισμὸς εἰς μὲν λόγος τοῦ τί ἐστὶν ἀναπόδεικτος. These Definitions are assumed prior to all demonstration<sup>2</sup>, and are real, inasmuch as the existence of the objects is assumed with them. The ground of the assumption will vary according to the nature of the object to be defined<sup>4</sup>.

With regard to the third class of definitions, described as τῆς τοῦ τί ἐστὶν ἀποδείξεως συμπέρασμα, Commentators

to support this interpretation requires considerable straining of Aristotle's language.

<sup>1</sup> Tristram Shandy, vol. iii. ch. 41. see also Rabelais, liv. 1. ch. 40.

<sup>2</sup> Metaph. vi. 17. 2. τὸ μὲν οὖν διὰ τί αὐτό ἐστιν αὐτό, οὐθὲν ἐστὶ ζητεῖν.

<sup>3</sup> Anal. Post. ii. 9. 1. ὥστε δῆλον ὅτι καὶ τῶν τί ἐστὶ τὰ μὲν ἅμεσα καὶ ἀρχαὶ εἰσιν, ἃ καὶ εἶναι καὶ τί ἐστὶν ὑποθέσθαι δεῖ ἢ ἄλλον τρόπον φανερά ποιῆσαι.

<sup>4</sup> Metaph. x. 7. 2. λαμβάνουσι δὲ τὸ τί ἐστὶν αἱ μὲν [ἐπιστῆμαι] διὰ τῆς αἰσθήσεως αἱ δ' ὑποτιθέμεναι διὰ καὶ δῆλον ἐκ τῆς τοιαύτης ἐπαγωγῆς ὅτι τῆς οὐσίας καὶ τοῦ τί ἐστὶν οὐκ ἔστιν ἀπόδειξις.

are at issue, whether they are to be regarded as nominal, or as imperfect real definitions<sup>a</sup>. The question is of the less importance, inasmuch as Aristotle elsewhere condemns the use of such definitions altogether<sup>x</sup>. The weight of authority is perhaps with the latter interpretation. But, judging merely from the text of Aristotle, the former seems far simpler and more natural<sup>y</sup>.

From the above statement it would appear that Nominal Definition, according to Aristotle, is one in which there is no evidence of the existence of objects to which the definition is applicable. In form it need not necessarily differ from a Real Definition. There may be a quasi-genus and a quasi-difference, as if we defined a centaur, "an animal with the upper parts of a man and the lower parts of a horse;" but, until we have ascertained the existence of creatures possessing these characteristics, the definition is only one of the signification of a name<sup>z</sup>.

<sup>a</sup> Of the former opinion are Averroes and Zabarella, who are followed by M. St. Hilaire in his Translation of the Organon. The latter is maintained by the Greek Commentators, by Pacius, and in the recent Essays by Rassow and Kühn.

<sup>x</sup> See De Anima, ii. 2. 2.

<sup>y</sup> The decision partly depends on the interpretation of a doubtful passage, Anal. Post. ii. 8. 4. τὸ δ' εἰ ἔστιν ὅτ' ἐκ μὲν κατὰ συμβεβηκὸς ἔχομεν, ὅτ' ἐκ ἔχοντες τι αὐτοῦ τοῦ πράγματος. The instances which follow may refer either to the one or the other.

<sup>z</sup> It may be questioned whether the name Nominal Definition is sanctioned by Aristotle. Trendelenburg indeed (Elementa, §. 55.) so renders the λόγος ὀνοματώδης of An. Post. ii. 10. 1. and the interpretation, if correct, would seem to shew that Nominal, as well as Real Definitions must be sentences; but the context, λόγος τοῦ τί σημαίνει τὸ ὄνομα ἢ λόγος ἕτερος ὀνοματώδης, seems rather to mean, "a Definition of the signification of a name, or of another sentence having the force of a name." On the other interpretation, the word ἕτερος is superfluous, and the example, οἷον τὸ τί σημαίνει τί ἔστιν ἢ τρίγωνον, unintelligible. By λόγος ὀνοματώδης is therefore meant a sentence whose signification, like that of a single noun, is one. Such are all real Definitions, of which the example is a specimen. See De Int. 5. 2. Metaph. vi. 4. 16. vii. 12. 2. vii. 6. 2. Alex. Schol. p. 743. a. 31. In the Greek Commentators, on the other hand, λόγος ὀνοματώδης is clearly used for Nominal Definition. See Philop. Schol. p. 244. b. 31.



There is also no warrant in Aristotle for limiting the means by which Nominal Definition may be effected; as is done by those Logicians who specify synonyms and etymologies. The latter indeed seems to have trespassed on the domain of Logic from that of Rhetoric. Nor has it the slightest connection with the former, save by an ambiguity of language. The etymology will in nine cases out of ten declare, not the present meaning of the word, but either one that has become obsolete, or some secondary notion, which may account for the imposition of the name, but which at no time formed, strictly speaking, any part of its signification. This holds equally of real objects and imaginary. It is only by an equivocation that "bull-piercer" can be assigned as the meaning of "centaur," or the notions of a swine and a quickset fence be combined into that of "hedgehog."

Definition by synonym, on the other hand, may be one of the means of explaining the signification of a name; though relatively only, and from the accidental circumstance of one word being more familiar to the hearer than another; in which respect all translations from one language into another are equally nominal definitions. It is not, however, specially mentioned by Aristotle\*. As a real definition it is obviously inadmissible, as it neither assigns the cause of a phenomenon nor developes the contents of a notion.

The above data will also furnish us with an answer to a question, which, latterly at least, has been a sore puzzle to the tyro in Logic. What are the limits of Definition? If all real Definition must be by Genus and Differentia,

\* Synonyms are expressly denied to be real Definitions in the proper sense by Aristotle, *Top.* I. 5. 1. though admitted to be *ῥημικά*. As Nominal Definitions, they are allowed by Alexander on *Metaph.* vi. 4. p. 442. ed. Bonitz; but the genuineness of this portion of the Commentary has been questioned.

the Definition must in every case be a *Species*. Summa Genera and Individuals are in that case alone indefinable. And for this limitation, the authority of Aristotle may be cited. On the other hand, Locke<sup>b</sup> assures us that this restriction is erroneous, and that *Simple Ideas* alone are incapable of Definition<sup>c</sup>. The dispute may be reduced to a mere verbal question. For Aristotle does not maintain that all Definitions must be by Genus and Differentia, but only those of Substances. In the passages which seem to extend this rule, Definition is used in the narrow sense which has been previously mentioned<sup>d</sup>. For it is obvious, to take the instances adduced above, that "quenching" cannot be called the genus of "thunder," or "interception" of "eclipse," in the same

<sup>b</sup> Essay, b. iii. 4. 7. But Locke has in this matter been anticipated by Descartes, Princip. i. 10. Sir W. Hamilton (Reid's Works, p. 220.) maintains that Aristotle has said the same thing. It is dangerous to dispute any thing which a man of Sir William's learning professes to have discovered in so wide a field as Aristotle, especially as he gives no references; but if the passage alluded to be Metaph. vi. 17. 7. one might be tempted to hazard a different interpretation. Τὰ ἀπλᾶ seem rather to be the elements, (ἀπλᾶ σώματα, Met. vii. 1. 2.) which have not, like compound substances, received a definite form, and thus are not definable. But the words are not sufficiently decisive to furnish much ground for any theory. A more remarkable passage occurs in Occam's Logic, Pt. i. ch. 28. "Ex prædictis sequitur quod nulla intentio quæ est præcise communis rebus simplicibus carentibus compositione ex materia et forma habet differentias essentielles; quia non habet partes, quamvis possit habere multas differentias accidentales. Ex illo sequitur ulterius quod nulla species quæ est præcise simplicium est definibilis definitione proprie dicta, sive sit in genere substantiæ sive in quocunque alio predicamento." This, coupled with Occam's Conceptualist theory of Universals, is not very different from Locke's position concerning Simple Ideas.

<sup>c</sup> By Simple Ideas, Locke meant all ideas derived immediately from sensation or reflection. In the formation of these the mind is wholly passive, whereas in the formation from them of Complex Ideas, it is active. Among Simple Ideas derived from sensation, he enumerates solidity, space, figure, rest, and motion; from reflection, perception and volition; from both, pleasure and pain.

<sup>d</sup> As, for example, Topics i. 8. 3. Compare Metaph. vi. 4. 12, 16. vi. 5. 5. and Alex. in Metaph. p. 442. 30. ed. Bonitz.

sense as "animal" is of "man." Whereas Locke's simple ideas are exclusively ideas of attributes. By reference then to Aristotle's account of the latter, it will plainly appear that he and Locke mean two very different things by Definition. With the former, it is an investigation of the objective cause of a phenomenon; with the latter, an analysis of the subjective impression which that phenomenon produces in the mind. The *idea* of an interception of light is not part of the *idea* eclipse, but the one phenomenon is the physical antecedent and cause of the other. Inquiries of this kind are still classed among the most important problems of Physical Science. What, for example, is light? Is it a succession of material particles, or the undulations of an elastic medium? The solution of this question would not be a Definition in Locke's sense of the word; i. e. it would not be an analysis of the idea of light produced in the mind by sensation. The same may be said of colour. The mental sensation of whiteness or redness is altogether unaffected by the researches of Optics. The external cause of colour, regarded as a quality of bodies, falls directly within the province of the Science\*. The determination of such problems will be, in Aristotle's sense of the term, Definition.

This may be further illustrated by reference to a discussion of Aristotle's which few probably have perused for the first time, without considering it as singularly vague and unsatisfactory. I mean the dissertation on Pleasure, in the tenth Book of the Nicomachean Ethics. We are struck with the absence of any thing like a Definition or Analysis of the emotion; and a reader who commences the study of the book with some previous knowledge of Locke's theory of Simple Ideas, will probably be disposed to regard it as an attempt to define

\* Compare on this subject, Reid, Inquiry, ch. vi. sect. 5.

that which is incapable of definition, and which in consequence necessarily involves its own failure. The same may be said of the principal opinion which Aristotle controverts. Whether we regard Pleasure with Plato, as consisting in a motion towards our natural state of harmony, or with Aristotle, in the perfection of our energies; neither of these can be termed an explanation of the feeling itself, but only of the cause by which it is produced. Pleasure itself remains an indefinite something, consequent on the one or the other. Yet examined according to Aristotle's own view of the definition of Attributes, we see that pleasure is as fairly defined by the perfection of the energy, as an eclipse by the interception of light.

There are, however, conditions and limits to the definitions of Attributes, though they are not the same as those of Substances. Every Substance to be definable must be a *Species*. Every Attribute must be a *Property*, i. e. must be capable of demonstration by its cause. Accidents then, as merely contingent attributes, are incapable of definition. This limitation, however, is merely relative to the degree of our knowledge of the matter. The advance of Science may transform Accidents into Properties, and thus furnish the requisite means of definition.

Before concluding the subject, it will be necessary to say a few words on two other points connected with Aristotle's doctrine of Definition.

The first of these is his method of investigating, or, as he terms it, *hunting for*, the Definition. This may be effected in two ways, commonly called the methods of Division and Induction. The first of these consists in taking a wide Genus, under which the object to be defined is evidently included, and contracting it by the addition of successive differentiæ, till we obtain a com-

plex notion coextensive with that of which the Definition is sought. Of the notion thus obtained, each separate part is more extensive than that which is to be defined, though the whole is not so<sup>f</sup>.

This method was a favourite with Plato; it was rejected as useless by Speusippus<sup>g</sup>. Aristotle adopts an intermediate course, limiting, however, its utility chiefly to two points,—the right arrangement of the several parts of the Definition, and the security that nothing essential is omitted. It would thus seem to be useful, not so much for *discovering* Definitions as for *testing* them<sup>h</sup>; and even in this respect will be applicable only to one class of Definitions, that of Substances by genus and differentia.

For discovery, the second method is employed. This is commonly called the Inductive Method; a name, however, not sanctioned by Aristotle himself<sup>i</sup>. It consists in examining the several individuals of which the term to be defined is predicable, and observing what they have in common. If we can obtain one common notion, that

<sup>f</sup> Anal. Post. ii. 13. 3. Τὰ δὴ τοιαῦτα ληπτέον μέχρι τούτου, ἕως τοσαῦτα ληφθῇ πρῶτον, ὥν ἕκαστον μὲν ἐπὶ πλείον ὑπάρξει, ἅπαντα δὲ μὴ ἐπὶ πλείον ταύτην γὰρ ἀνάγκη οὐσίαν εἶναι τοῦ πράγματος. Yet in the Metaphysics (vi. 12.) he seems to maintain that the last differentia must be coextensive with the subject; a view generally adopted by the Scholastic Logicians, though manifestly inconsistent, not only with the passage above quoted, but with the example appended, τὸ δὲ τελευταῖον καὶ τῇ δυνάδει. In the Metaphysics however he seems to be speaking, not of the specific difference *per se*, but of the difference regarded as dividing the genus. But this is in fact equivalent only to saying that the whole must be coextensive; which no one would think of denying.

<sup>g</sup> See Scholia, p. 179. b. 40. 248. a. 11.

<sup>h</sup> This is perhaps marked by Aristotle's own language. In reference to the one method, he uses *κατασκευάζειν*; to the other, *ζητεῖν*.

<sup>i</sup> Aristotle does not give any name to the process; by his Commentators it has been variously denominated the method of Resolution, of Composition, of Induction. Cf. Ed. Rev. No. 115. p. 236. Zabarella, *Logic*, p. 1212. Pacius on Anal. Post. ii. 13. 21.

is the Definition sought ; if not, the object of inquiry is not one but many. This method is equally applicable to Substances and to Attributes, though Aristotle only gives an example of the latter, the definition of magnanimity, gained by examining into the actions of different magnanimous persons.

Another important remark of Aristotle's is, that although, as we have already seen, demonstration, in certain cases, must always precede definition, yet no definition, as such, can be proved. This he maintains at some length (against Xenocrates<sup>\*</sup>), in Anal. Post. i. 4. and shews that every attempt at such demonstration necessarily involves a *petitio principii*. The reason is obvious : since a definition can be predicated essentially (*ἐν τῷ τῷ ἑστί*) of nothing but that of which it is a definition ; and since, to prove a conclusion concerning the essence, the premises must be of the same character ; the middle term assumed must be identical with the minor, and the major premise with the conclusion.

Such is Aristotle's Theory of Definition. Its fundamental principle may still, *mutatis mutandis*, be retained, notwithstanding that the speculations of modern philosophy have considerably modified his distinctions of Substances and Attributes. Properly speaking, indeed, all Definition is an inquiry into *Attributes*. Our complex notions of Substances can only be resolved into various Attributes, with the addition of an unknown *substratum* :—a something to which we are compelled to regard these Attributes as belonging<sup>1</sup>. *Man*, for example, is analysed into Animality, Rationality, and the something which exhibits these phenomena. Pursue the analysis, and the result is the same. We have a some-

<sup>\*</sup> Scholia, p. 242. b. 35. Trendelenburg, de An. p. 273. Kühn, de Notionis Definitione, p. 11.

<sup>1</sup> Cf. Locke, Essay, book ii. ch. 23.

thing corporeal, animated, sensible, rational. An unknown constant must always be added to complete the integration; unfortunately we have no means of determining its value. Still, this does not affect the basis of the Aristotelian distinction. For some phenomena can be accounted for by other phenomenal causes; in others, we must acquiesce in the conviction that they are so, merely because they are. It is clearly impossible for the mere hypothesis of an unknown substratum to explain the reason of all the variety of attributes which different objects exhibit.

One further question remains. How far Definition properly belongs to the province of Logic, was, as we have seen, an early point of dispute among the Schoolmen<sup>m</sup>. On this question the authority of Aristotle is of little avail for either side. That his treatment of the subject has far more of a material than a formal character is undeniable. And to those who maintain that the *Organon* of Aristotle is designed as a systematic treatise on a single subject called Logic, such testimony must be decisive as regards both the material character of much of the Science, and its inclusion of Definition. But then it remains, and probably will continue to remain, a problem, to frame a conception of Logic adequate to the province thus assigned to it. This question has been already treated of in the Introduction, and need not be repeated here. It is sufficient to say that, as far as any evidence is furnished, either by the writings of Aristotle himself or by external testimony, as to their original connexion; it is no more a departure from the authority of the Stagirite to assign a field to Logic incommensurate with that of the *Organon*, than it is to write a moral treatise on the basis of the *Ethics*, without including the *Politics*. Leaving then the question of

<sup>m</sup> See p. 33.

authority, we may fairly assert that Logic as a formal Science can take no cognisance of the following points.

I. It has nothing to do with determining the physical existence of attributes in their subjects; which is in fact an inquiry into the *material truth* of the propositions in which such attributes are predicated. It is true that such propositions are by Aristotle considered as the conclusions of Syllogism, and so far their truth is merely formal. But it must be remembered, that no attribute can be syllogistically demonstrated of one subject, without being in the premise asserted of another; and it is upon the material truth of the latter proposition that the certainty of the former, and the demonstrative character of the whole reasoning, ultimately depends.

II. Logic has nothing to do with testing the material *correctness* of a definition, i. e. ascertaining how far the notions developed in our analysis of a conception correspond to the principal phenomena exhibited by the objects usually included under that conception; nor even with the inquiry, whether our usage of terms corresponds with the ordinary language of others.

Still less does it lie within the province of Logic to perform the functions either of a Dictionary or of an Index to Physical Science; to convey, that is, information from without, whether concerning the meaning of words or the nature of things, into a mind previously ignorant. Whereas from the statements of some Logicians, one might almost imagine that they regarded their Science as furnishing, as it were, Logarithmic Tables of things in general; Catalogues of Genera and Differentiæ, to which we have only to refer any given object, to obtain full information concerning it<sup>a</sup>.

<sup>a</sup> See Keckermann, Syst. Log. Min. lib. i. cap. 17. "In hunc enim usum istæ rerum tabulæ et delineationes præcipue illic adumbrantur, ut definitum quæratur, simulque animo lustretur, quid ex parte superiori proxime



These being excluded, the only office that remains for Logic to perform, is to contribute to the *distinctness* of a conception, by an analysis and separate exposition of the different parts contained within it. This operation is analogous to that of drawing formal inferences, *virtually* contained in their premises, though not explicitly developed°. It is a process of self-examination, not dissimilar to the Platonic application of Dialectic, though widely differing as regards the objective truth of its results. For the Logical process furnishes only a subjective criterion; it enables us to represent more distinctly to the mind, the notions previously existing there in more or less confusion: its rules direct us to compare conceptions one with another, and furnish some security for our own consistency in employing them; they do not enable us to ascertain their accordance with external objects, or to add the deficient parts, where they are inadequate representatives of the latter. The mind, like the sky, has its nebulæ, which the telescope of Logic may resolve into their component stars. But here the parallel fails. The Logical instrument discovers no luminary whose rays have not previously entered the eye; it tells us nothing of their relative distances, of the velocity with which their light travels; of any thing, in short, which did not form a confused portion of the sensuous representation<sup>p</sup>. This may seem but beggarly service to be performed by the Art of Arts and Science of Sciences. Inferior certainly it is to the gigantic

definito adjaceat: id enim erit ejus Genus: e. g. cupio conficere definitionem Hominis: cogito ergo primum in quo prædicamento sit Homo, et deprehendo ex notis Substantiæ, esse in prædicamento Substantiæ: quocirca tabulam hujus prædicamenti perlustrans animo, deprehendo hominem proxime collocari sub animali: hinc concludo hoc esse proximum ejus genus. Sic in aliis proceditur definitis per singula prædicamenta."

° Cf. Anal. Post. i. 24. 11.

<sup>p</sup> Cf. Kant, Logik, Einleitung. V.

purposes which more than one Logical Titan has essayed to accomplish with the same instrument. But let not its legitimate uses be condemned, because it has abated somewhat of the "vaulting ambition which overleaps itself." It furnishes the mould by which the ever-accumulating matter of consciousness is reduced to form and consistency; it were ungrateful to despise it, because it does not also dig the metal itself from the mine.

## NOTE C.

## ON MATERIAL AND FORMAL CONSEQUENCE. •

A MATERIAL Consequence is defined by Aldrich to be one in which the conclusion follows from the premises solely by the force of the terms. This in fact means, from some understood Proposition or Propositions, connecting the terms, by the addition of which the mind is enabled to reduce the Consequence to logical form. This is easily seen, both in Aldrich's example, "Homo est animal, Ergo est vivens," and in the rather more complicated instance given by Sanderson, "Socrates est risibilis, ergo, Aliquis homo est rationalis." The latter, when the necessary conditions are supplied, is expanded into two syllogisms.

Omne risibile est rationale ;  
 Socrates est risibilis,  
 Ergo, Socrates est rationalis.  
 Socrates est homo,  
 Ergo, Aliquis homo est rationalis.

The failure therefore of a Material Consequence takes place when no such connection exists between the terms as will warrant us in supplying the premises required : i. e. when one or more of the premises so supplied would be *false*. But to determine this point is obviously beyond the province of the Logician. For this reason, Material Consequence is rightly excluded from Logic.

Moreover, even where true premises can be added, and the Consequence legitimately deduced, we cannot, except from knowledge of the matter, determine into what form the reasoning will naturally fall. In some cases, as in the example above quoted from Sanderson,

the proof may be given in Categorical Syllogisms. In others, it is far more naturally exhibited in the hypothetical form. The assumption of a hypothetical premise will always present the reasoning in a logically valid, though not always in the most natural, form; and it is frequently the only materially allowable assumption in cases where the given antecedent and consequent have both terms distinct. E. g. A is B, therefore C is D. We may supply, If A is B, C is D; but to determine the truth of the assumed proposition, whether it be hypothetical or categorical, does not fall within the province of the Logician.

Among these material, and therefore extra-logical, Consequences, are to be classed those which Reid adduces as cases for which Logic does not provide; e. g. "Alexander was the son of Philip," therefore "Philip was the father of Alexander;" "A is greater than B," therefore "B is less than A." In both these it is our material knowledge of the relations "father and son," "greater and less," that enables us to make the inference.

Another of Reid's examples is the following: "A is equal to B, and B is equal to C, therefore A is equal to C." This reasoning is elliptical, and therefore, *as it stands*, material; though owing to the suppressed premise being self-evident, its deficiency is apt to be overlooked. Stated in logical form, the syllogism runs thus:

Things that are equal to the same are equal to each other;  
A and C are equal to the same,  
Therefore A and C are equal to each other<sup>a</sup>.

Another example of the same kind is that sometimes called reasoning *a fortiori*. E. g. "A is greater than B,

<sup>a</sup> Hamilton on Reid, p. 702.

and B is greater than C, therefore *a fortiori* A is greater than C." The logical form is,

Whatever is greater than a greater than C is greater than C;  
A is greater than a greater than C,  
Therefore A is greater than C.

Or if it be required that the *a fortiori* nature of the reasoning appear in the conclusion, we must state the major, "Whatever is greater than a greater than C is greater than C *by a greater difference*<sup>b</sup>."

Of the same kind is the reasoning, "A is equal to B, therefore twice A is equal to twice B." The logical form is,

The doubles of equal things are equal;  
Twice A and twice B are doubles of equal things,  
Therefore they are equal.

The major premise might be stated more generally, "Equimultiples of equal things are equal."

<sup>b</sup> In Mr. De Morgan's Logic, p. 21, the reader will find a very different, and I believe erroneous, account of this species of Syllogism.

## NOTE D.

## IS THE SYLLOGISM A PETITIO PRINCIPII?

THE eagle of the Libyan fable was killed by an arrow feathered from his own wing. The armoury of the Logician has been fondly imagined to contain the fatal weapon of his own destruction. But the champion destined to wield it, if such there be, is somewhat tardy in his forthcoming. More than one Sir Kay has essayed the adventure of the sword; the Arthur destined to achieve it remains in all the mysterious dignity of a Coming Man. In other words, many writers have succeeded in shewing their own ignorance of the nature of the fallacy called *Petitio Principii*; they have not been equally successful in proving the invalidity of the Syllogistic process.

Let us first endeavour to ascertain what the *Petitio Principii* really is. The name is a blundering translation of the Aristotelian τὸ ἐν ἀρχῇ (or τὸ ἐξ ἀρχῆς) αἰρεῖσθαι: i.e. the assumption, not of the principle properly so called\*, but, in some form or other, of the *question originally* proposed for proof. And it is remarkable, that among the five modes of this fallacy enumerated by Aristotle, one is in form not distinguishable from the legitimate Syllogism<sup>b</sup>. Selecting this variety, as that by which most of all the objection is to be sustained, we will proceed to examine its peculiarities.

\* "Without entering on the various meanings of the term Principle, which Aristotle defines, in general, *that from which any thing exists, is produced, or is known*, it is sufficient to say, that it is always used for that on which something else depends; and thus both for an original *law*, and for an original *element*." Sir W. Hamilton, Reid's Works, p. 761.

<sup>b</sup> Top. viii. 13. 2. Δεύτερον δὲ ὅταν κατὰ μέρος δέον ἀποδείξαι καθόλου τις αἰτήσῃ, οἷον ἐπιχειρῶν ὅτι τῶν ἐναντίων μία ἐπιστήμη, ὅλως τῶν ἀντικειμένων ἀξιώσειε μίαν εἶναι.

In the first place, it is manifestly necessary to a *Petitio Quæsiti*<sup>c</sup>, as the fallacy may more correctly be called, that there should be a question proposed for *proof*. And hence it was long ago acutely remarked by Peter of Spain, that such a fallacy cannot be committed in a Syllogism of *inference*<sup>d</sup>. If, that is, the truth of the premises is known beforehand, and the only question is, what may we infer *from them*? there is no necessity for *begging* or *assumption* of any kind. It is clear then, that not the Syllogism in general, but at most only one particular application of it, can beg the question.

But it may be answered, that the truth of such premises never can be ascertained, but by a previous induction embracing all particular cases, and that Syllogistic inference is therefore at least futile, since the conclusion drawn must be presumed to be already known. But this answer itself assumes what has never yet been satisfactorily proved, the dependence of all knowledge of Universals on Induction. If axiomatic principles can be acquired in any other way, one class of Syllogisms is at least exempt from the charge<sup>e</sup>.

And even in respect of principles allowed to be inductive, the actual previous assumption of every possible instance is not necessarily implied. And it is here that an able defender of the Syllogism, Mr. Mill, has taken a low and inadequate ground, a ground too, inconsistent with his own subsequent analysis of the process of Induction. His defence in fact amounts to an abandon-

<sup>c</sup> Pacius in Anal. Prior. ii. 16.

<sup>d</sup> "Sciendum quod hæc fallacia non impedit syllogismum inferentem, sed probantem, et ita fallacia petitionis peccat contra syllogismum dialecticum in quantum dialecticus est." Summ. Log. Tract. vi.

<sup>e</sup> Kant's criterion of necessity as the sure characteristic of a cognition *a priori*, has not yet been refuted by those who refer all principles to Induction.

ing of all formal reasoning. All reasoning, he tells us, is really from particulars to particulars. But in that case, all inference must depend upon the matter, and cannot be reduced to any general type. If, for example, I conclude that the Duke of Wellington is mortal, solely from the premises, "John, Thomas, &c. are mortal, and the Duke of Wellington resembles these in certain other attributes;" I might, by an argument of precisely the same *form*, prove him to be a Frenchman, because he possesses the attributes of humanity in common with certain given individuals of that nation.

This portion of the question resolves itself into the following. What do we mean when we assert that all men are mortal? Is it merely a concise mode of stating that Socrates and Plato possess this attribute, in common with a number of other individuals, *quos nunc perscribere longum est*? If so, to argue, "Socrates is one of the individuals above mentioned, therefore he is mortal," is, if not a *begging* of the question, at least a needless repetition of a previous statement.

But, in fact, the Universal proposition means no such thing. It means that, by virtue of a certain established law, certain attributes, or groups of attributes, are always so united, that in whatever individuals we find the one, we may look upon them as an infallible mark of the other. A conviction of this kind however, as it can never be gained by any mere observation of particulars, so it need not presuppose a complete enumeration of them<sup>f</sup>.

<sup>f</sup> "Hinc jam patet, inductionem per se nihil producere, ne certitudinem quidem moralem, sine adminiculo propositionum non ab inductione, sed ratione universali pendentium; nam si essent et adminicula ab inductione, indigerent novis adminiculis nec haberetur certitudo moralis in infinitum. Sed certitudo perfecta ab inductione sperari plane non potest, additis quibuscunque adminiculis, et propositionem hanc: totum majus esse sua



“ For, when one’s proofs are aptly chosen,  
Four are as valid as four dozen.”

To determine under what conditions such a conviction can be obtained, is a question requiring an analysis of the whole process of Induction. Such an analysis, in many respects most ably performed<sup>s</sup>, will be found in the third book of Mr. Mill’s Logic; but few I think can compare that part of the work with his earlier defence of the Syllogism, without admitting that the two presuppose different and inconsistent theories of the import of Universal Propositions. It will be sufficient, however, for my present purpose to observe that, unless the establishment of an Universal Proposition requires an explicit and conscious examination of every existing and also of every possible particular instance, no charge of *Petitio Principii*, or even of vain repetition, can be maintained against the Syllogism. Those who maintain the antecedent, abandon themselves to an absolute scepticism; and

parte, sola inductione nunquam perfecte sciemus. Mox enim prodibit, qui negabit ob peculiarem quandam rationem in aliis nondum tentatis veram esse.” Leibnitz, de Stylo Nizolii.

Mr. Mill’s *adminicula* to Induction are certain canons stating the principles of the Method of Agreement, of Difference, &c. which, together with the whole law of universal causation, he makes dependent upon a *weaker* evidence than philosophical induction; *the inductio per enumerationem simplicem*. At the same time he enters his protest against “adducing, as evidence of the truth of a fact in external nature, any necessity which the human mind may be conceived to be under of believing it.” His words, strictly taken, would destroy the evidence of our senses; for what are sensations but states of mind? and why do we refer our internal consciousness to an external cause, except that by the constitution of our minds we are necessitated to do so? The admonition of Hooker is not quite obsolete even amid the lights of modern philosophy. “The main principles of Reason are in themselves apparent. For to make nothing evident of itself to man’s understanding were to take away all possibility of knowing any thing. And herein that of Theophrastus is true, ‘They that seek a reason of all things do utterly overthrow Reason.’” Eccl. Pol. i. 8. 5.

<sup>s</sup> His theory of Causation must however be excepted.

against such, no defence of any source of human knowledge can or need be attempted.

With regard to the syllogism of *proof*, we may examine the question a little more closely. The *Petitio Principii* is a *material*, not a *formal* fallacy, and consists in assuming, in demonstration, a non-axiomatic principle as axiomatic, or in dialectic disputation, a non-probable principle as probable<sup>h</sup>. It does not affect the form of the reasoning; but depends on the selection of premises, when the syllogism is employed for the particular purpose of *proof*, demonstrative or dialectic. Those are guilty of it who do not adopt such premises as the laws of the two processes require; in the one case, propositions axiomatic or deducible from axioms; in the other, probable statements, sanctioned by the general opinion of mankind or the authority of eminent persons.

In reading Aristotle's account of this fallacy, it is evident that the whole point of the matter lies in the word *αἰτεῖσθαι*, or *λαμβάνειν*; and that the question to be asked is, not whether the premises virtually contain the conclusion<sup>i</sup>, but whether such premises can properly be said

<sup>h</sup> See Anal. Pr. ii. 16. Top. viii. 13.

<sup>i</sup> One class of reasonings are perhaps fairly chargeable with the fallacy. I allude to what are commonly called the *proper syllogisms* of the Ramists, which have two Singular Premises. In the first figure, it is evident that the conclusion is not one out of many inferences contained in the major premise, but the very same proposition stated in different language. The third figure is open to the same objection, but it may be allowed as an *ἐκθεσις* or expository instance—a process not reckoned by Aristotle as syllogistic. Proper syllogisms in the second figure are valid, and frequently serviceable; but when reduced to the first, (which Aristotle regards as a necessary test of validity,) the negative premise must be converted from singular to universal.

Nevertheless, as the *Petitio Principii* is a material, not a logical, fallacy, this does not furnish grounds for objecting to the convenient arrangement by which singular propositions are considered as in syllogism equivalent to universals. They may be regarded, in common with other cases of the same fallacy, as reasonings valid in form, but unsound from material circumstances.

to be *begged*, or *assumed*<sup>1</sup>. It is clear then that *Petitio Principii* is not the fault with which the Syllogism is chargeable, unless it can be shewn that every statement of an Universal Proposition must be, in this sense of the term, *begging* or *assuming*. If there are any cases in which the assertion of such propositions depends on a warranted conviction, not on a gratuitous assumption, from whatever source that conviction may arise, such cases must be exempt from the charge of *Petitio Principii*.

And if there be any such cases, the opponents of the Syllogism have themselves unwittingly stumbled upon a fallacy cognate to that with which they taunt its defenders. For the *Petitio Principii* being in that case a particular misapplication of the syllogistic method, and postulating the latter as a condition of its practicability, they have inverted the relation of prior and posterior, and assumed *Petitio Principii* to be necessary to the existence of Syllogism.

But if, on the other hand, there are no such cases, and the Syllogism is in consequence henceforth to be banished from Philosophy, what do we gain in exchange? We reduce the Laws of Thought from necessary to contingent. We degrade certainty into probability, and can claim for that only a subjective validity. But until this latter hypothesis is proved, the Syllogism,

The Proper Syllogisms, however, though a post-Aristotelian innovation, did not originate with Ramus. Aquinas expressly denies that both premises in a syllogism may be singular, and admits the *ἐκθεσις* as a non-syllogistic process, being an appeal to the senses, not to the reason. See Opusc. xlvii. init. Occam, on the other hand, virtually surrenders the whole principle, when he allows that the major premise in the first figure may be singular. Logic, pt. iii. cap. 8.

<sup>1</sup> That axiomatic principles are not of this character, may be seen from Anal. Post. i. 10. 6. Οὐκ ἔστι δ' ἐκθεσις οὐδ' ἀγνῶστα, ὅ ἀνάγκη εἶναι δι' αὐτὰ καὶ δοκεῖν ἀνάγκη.

whatever may be its errors or deficiencies, cannot be comprehended under any one of the fallacies *admitted to be such by the Logician*. And this is sufficient as a defence of his own consistency. His method may be an incorrect analysis of the laws of the reasoning process; it may be that there are no such laws at all. But of either of these positions the *onus probandi* lies with the assailants, not with the defenders of the Syllogism. It is quite enough for the Logician, if he exhibit all that is generally considered valid reasoning in a syllogistic form. If any maintain that a simpler or better type is attainable, he waits with patience till they produce it. If all reasoning is fallacious, he may be contented to behold his theories fall in the general overthrow of all human knowledge. But, pending the decision of this question, he may leave his adversaries their choice of one or the other horn of a dilemma. If there are universal principles of truth not entirely dependent on sensation, the existence of such principles will warrant syllogistic inference. If there are not, whatever be the value of our individual sensations, all inference from them, by induction, example, analogy, or any method whatever, is, in respect of objective certainty, worthless.

## NOTE E.

## ON THE ENTHYMEME.

THE Enthymeme is defined by Aristotle, συλλογισμὸς [ἀτελής] ἐξ εἰκότων ἢ σημείων. The word ἀτελής is now universally admitted to be spurious; and that upon abundantly sufficient evidence, both external and internal<sup>a</sup>. Externally, it is not countenanced by the best MSS. Internally, it is inconsistent with the ordinary language of Aristotle; with whom the *imperfect syllogism* signifies, not a Syllogism with one portion suppressed, but a Syllogism in the second or third figure, which is not immediately evident by the *dictum de omni et nullo*. The word is an interpolation, and a clumsy one, designed to accommodate Aristotle's definition to subsequent views of the nature of the Enthymeme, and made by a scribe not particularly well versed in Aristotelian phraseology.

The εἰκὸς and σημείον themselves are Propositions<sup>b</sup>; the former stating a *general probability*, the latter a *fact*, which is known to be an indication, more or less certain, of the truth of some further statement, whether of a single fact or of a general belief. The former is a proposition nearly, though not quite, *universal*; as, "Most men who

<sup>a</sup> For a full account of the evidence on this point, see Pacius on Anal. Pr. ii. 27. 3. and Sir W. Hamilton, in Ed. Rev. No. 115. p. 222.

<sup>b</sup> As is stated, An. Pr. ii. 27. 1. and Rhet. i. 3. 7. In a looser sense, however, the terms εἰκὸς, σημείον, τεκμήριον, are often used for the Enthymemes drawn from each. The εἰκὸς is clearly regarded by Aristotle as a *general proposition*, employed as a premise. In the Rhetoric, i. 2. 15. he describes it as having the same relation to its conclusion as an universal to a particular. In another sense, any proposition may be called probable, which can as a *conclusion* be supported upon (morally) reasonable grounds; in which sense Anaximenes, or whoever was the Author of the *Rhetorica ad Alexandrum*, defines the εἰκὸς. (ch. 8. 4.)

envy hate:" the latter is a *singular* Proposition, which however is not regarded as a sign, except relatively to some other Proposition, which it is supposed may be inferred from it. The *εἰκός*, when employed in an Enthymeme, will form the *major premise* of a Syllogism such as the following :

Most men who envy hate,

This man envies,

Therefore, This man (probably) hates.

The reasoning is logically faulty; for, the major premise not being absolutely universal, the middle term is not distributed.

The *σημείον* will form one premise of a syllogism which may be in any of the three figures, as in the following examples :

Fig. 1.

All ambitious men are liberal,  
Pittacus is ambitious (Σ),  
Therefore, Pittacus is liberal.

Fig. 2.

All pregnant women are pale,  
This woman is pale (Σ),  
Therefore, She is pregnant.

Fig. 3.

Pittacus is good (Σ)<sup>c</sup>,  
Pittacus is wise,

Therefore, All wise men are good.

<sup>c</sup> In the first and second figures, the *σημείον* is clearly the *minor* premise; this alone being singular. In the third, as far as quantity is concerned, we may choose between both premises. It seems more natural however to prefer the major; because, in assigning a reason for our belief in a given proposition, we should naturally state a premise having either the same *predicate* or the same *subject*; not one in which the predicate of the premise is the *subject* of the conclusion. For example; Why do you believe Pittacus to be liberal? Because he is ambitious. Why do you believe wise men to be good? Because Pittacus is good. This is far more natural than to answer, "Because Pittacus is wise." The same consideration will furnish the data for interpreting an obscure passage in Anal. Pr. ii. 26. 5. which however it would exceed my present limits to attempt. The reader will find it rightly explained in a note to St. Hilaire's Translation, vol. ii. p. 341. with the exception that the syllogism may be more clearly stated in Cesare than in Camestres.

The Syllogism in the first figure is alone logically valid. In the second, there is an undistributed middle term: in the third, an illicit process of the minor.

The *σημείον* is defined by Aristotle, *πρότασις ἀποδεικτική ἀναγκαία ἢ ἔνδοξος*; in which the words *necessary* and *probable* do not relate to the modal character of the Proposition in itself, but to the nature of its connexion with the Conclusion which it is adduced to prove; i. e. to its *logical* validity when the other premise is added<sup>d</sup>; *without which addition, expressed or understood, there is no Enthymeme at all*<sup>e</sup>.

But it may be thought that the above examples do not furnish a sufficient criterion for distinguishing between the two kinds of Enthymeme. If both premises *must be* mentally, and *may be* orally, supplied, before there is any Enthymeme at all, how are we to determine whether any given specimen is an instance of reasoning from a sign, or from a likelihood? Why, for example, in the

<sup>d</sup> Rhet. i. 2. 17. Ἀναγκαῖα μὲν οὖν λέγω ἐξ ὧν γίνεται συλλογισμός. Cf. Anal. Pr. i. 1. 6. Συλλογισμός δὲ ἐστὶ λόγος ἐν ᾧ τεθέντων τινῶν ἕτερόν τι τῶν κειμένων ἐξ ἀνάγκης συμβαίνει. Here *syllogism* is used in its strictest sense. From another passage in the Rhetoric (i. 2. 14.) it has sometimes been imagined that all *σημεῖα* are necessary, at least as *propositions*; and the *σημεῖον* has even been defined, "a proposition in necessary matter;" as if "necessary matter" were the proper province of Rhetoric. The interpretation however is too inconsistent with Aristotle's subsequent language to be tenable. The words in question, if properly belonging to this place, (the resemblance to Rhet. i. 2. 8. is suspicious,) must be so interpreted as to identify the necessary propositions with one class only of *σημεῖα*, the *τεκμήρια*. The reference to the Analytics I conceive to allude, not to the account of modal conclusions deduced from modal premises, but to the *necessary conclusiveness* of premises logically connected, as opposed to the more or less *probable conclusiveness* of illogical combinations. As a special reference, supply Anal. Pr. i. 27. 12.

<sup>e</sup> Anal. Pr. ii. 27. 4. Ἐὰν μὲν οὖν ἡ μία λεχθῇ πρότασις, σημείον γίνεται μόνον, ἐὰν δὲ καὶ ἡ ἑτέρα προσληφθῇ, συλλογισμός. The context shews that he is speaking of Syllogism only in the looser sense in which all Enthymemes are included.

instance given above, may we not call the fact that "this man envies," a *sign* that he hates, as well as the general statement a likelihood? Does not the whole distinction depend on the question, which is the *stated*, which the *suppressed*, premise?

To this it may be replied, that Aristotle distinguishes the *σικδς* and *σημεῖον* merely as propositions, and no where says that they may not be combined in the same syllogism. In the instance given, it *so happens* that the minor premise is a singular proposition, and may fairly be considered a *sign* of the conclusion. But we might obviously employ a minor premise of another kind, such as, "All malignant men are envious;" in which case there is, properly speaking, no *sign* employed in the reasoning. But this does not affect the distinction between the two *Propositions*. A likelihood is such, *per se*,—a Proposition stating a general truth, which we are at liberty to apply or not to particular cases. A sign is a sign of something else,—a single fact stated as a proof of something further; which proof may, according to material circumstances, be logically or only *morally* conclusive.

Another question sometimes raised is, "If the Enthymeme has both premises supplied, how is it to be distinguished from the Dialectic Syllogism?" To which it may be answered, that, taking the word Syllogism in its strictest sense, as a reasoning logically correct, the same argument may in different points of view be considered either as a Syllogism or an Enthymeme. This is, of course, only the case with the *τεκμήριον*; the other specimens of the Enthymeme being logically invalid. The argumentation *ἐκ τεκμηρίου*, is in this sense both an Enthymeme and a Syllogism;—an Enthymeme on material grounds, inasmuch as its premise is a *sign* of its conclusion;—a Syllogism on formal grounds, inasmuch as it complies with the conditions of logical



reasoning. It is a Dialectic Syllogism, if employed for the purpose of dialectic disputation; and, as it usually relates to those subjects to which dialectic disputation is practically applied<sup>f</sup>, it may in general be regarded as potentially, at least, dialectic<sup>g</sup>.

In fact, it is not as an Enthymeme, but as a *Rhetorical Syllogism*, that a given specimen of reasoning is distinguished from the Dialectical. The object of the two arts is distinct. That of Dialectic is to convince the Intellect; that of Rhetoric, to persuade the Will. The same instrument may be employed by both, and it is merely the purpose for which it is employed that constitutes the distinction between them<sup>h</sup>. Whether the same means are always available for both purposes; whether the same informality of reasoning is allowed in Dialectic as in Rhetoric, must depend on the conditions by which the disputants in the former choose to bind themselves. The Rhetorician has to influence an audience: if he can effect this, he will not always be scrupulous about

<sup>f</sup> This, however, is by no means necessary. Matters not usually discussed either by the Dialectician or Orator may equally be proved by means of τεκμήρια. For example; the falling of the thermometer to 32° is a *sign* of freezing; the obscuration of the moon in eclipse is a *sign* that the earth's shadow is interposed between it and the sun. Such subjects are not *practically* dialectical, at least in Aristotle's view of the art. As far as the mere interrogatory form is concerned, it may be, and was by different Philosophers, applied to all varieties of matter.

<sup>g</sup> This proceeds on the supposition that the Dialectician is bound to logical accuracy in his reasonings; a restriction which Aristotle at least would regard as salutary. See Anal. Post. i. 6. 10. We need not however suppose that all disputants actually conformed to it.

<sup>h</sup> Cf. Crakanthorpe, Logic, lib. v. cap. 1. "Utrique Disciplinæ hoc commune est, quod doceat probabiliter arguere: finem vero diversum uterque sibi proponit. Quoniam ergo eâdem omnino formâ probabiliter arguendi uterque utitur, nos hic quod utrisque commune est tractabimus, unicuique liberum relinquentes, an Dialecticus esse velit, et uti hac formâ probabiliter arguendi *ad verum inveniendum*; an Rhetor, et uti eâdem formâ probabiliter arguendi *ad suadendum aut dissuadendum*."

the logical accuracy of his reasoning. In Dialectic, two champions are opposed to each other: they may, before engaging, dictate the conditions of the combat.

As regards the account of the Enthymeme in the Prior Analytics, I am not aware that any further explanation is needed<sup>1</sup>. But in the corresponding chapters of the Rhetoric one or two difficulties remain, an elucidation of which, though not strictly within my present province, may perhaps be serviceable to the readers of the latter Treatise.

In Rhet. i. 2, 18. we are told, that when the Enthymeme is in the third figure, the *σημείον* is to its conclusion as a particular to an universal. In the second figure, on the other hand, as an universal to a particular. The relation in the first figure is not mentioned, but the context seems rather to connect it with the former than with the latter.

This passage may be interpreted in two ways. Either we may compare the conclusion of the Enthymeme with the *σημείον* itself, or with the major premise of that Syllogism whose minor is the *σημείον*. In the former interpretation the word *σημείον* is used properly for the *proposition*; in the latter widely, for the reasoning of which such proposition forms a portion.

If the first interpretation be adopted, (which seems preferable,) we must compare the two propositions relatively to that term in which they are unlike; i. e. if they have the same subject, we must compare their

<sup>1</sup> Except perhaps that Aristotle, in Anal. Pr. ii. 27., admits a *σημείον* in the second figure, which in the former chapter he condemned. The condemnation seems to be made on logical grounds. The *logical* value of two affirmative premises in the second figure is absolute zero; whereas the *σημείον* in the third figure, though faulty as employed to prove an universal conclusion, is valid for particulars. For Rhetorical purposes, however, the second figure is also admissible: an accumulation of Enthymemes, all *logically* worthless, may amount to a *moral* certainty.

predicates; if they have the same predicate, we must compare their subjects.

According to this method, it will be seen, that in the first figure, the predicate of the sign is to that of its conclusion as part to whole, or as species to genus. Hence its logical validity: whatever subject is included under a species is necessarily included under its genus. But in the second figure the relation is that of whole to part, or of genus to species; and this is illogical, the whole genus not being included under one of its species.

But if we adopt the second interpretation, and compare the major premise with the conclusion, we shall be compelled in the first figure to compare together the two *subjects*, since both propositions have the same predicate. In this case the relation will be inverted; the premise being to the conclusion as an universal rule to a single instance. In the second figure, we are at liberty to compare either the quantity of the two propositions as determined by their subjects, or the extent of their respective predicates. In either case, however, the result is the same; the relation remaining that of universal to particular.

The Enthymeme in the third figure presents no difficulty. Whichever interpretation be adopted, the same Proposition, "Pittacus is good," is compared with the conclusion, "All wise men are good." In both cases, the comparison lies between the two subjects, and the relation is that of particular to universal.

But perhaps the most difficult passage in this portion of the Rhetoric is that in which Aristotle describes an important, and previously, as he tells us, unnoticed distinction between various classes of Enthymemes. Some of these, he says, belong to Rhetoric, some to other arts and faculties. The same may be said of the connexion of the Syllogism with Dialectic. Dialectical

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or Rhetorical reasonings are founded on *τόποι*; the others on the peculiar principles of that Science or Art to which they belong<sup>k</sup>.

This passage is generally found puzzling to a beginner on two accounts. Firstly, he is apt to fancy Dialectic synonymous with Logic, and to confound it with the formal Science of that name; an error which the Commentary most likely to fall in his way is not unlikely to confirm. Secondly, having previously seen the Enthymeme defined as the Rhetorical Syllogism; there seems some inconsistency in the subsequent observation, that some Enthymemes are Rhetorical, others not so.

In explanation it may be observed. Firstly, that Dialectic and Rhetoric are not formal Sciences, but material Arts. Their Logic is not a *Logica docens*, treating of the general form of Reasoning, but a *Logica utens*, treating of Reasoning as applied to a particular matter. That matter is furnished by the *τόποι*. Rhetoric and Dialectic do not merely lay down the form in which their reasonings ought to proceed, but likewise provide certain general principles of probability, from which the matter of their major premises is to be drawn. These *τόποι* or common-places hold the same position in the Dialectic Syllogism, as the most universal kind of axioms in the Demonstrative. They are not gained by exclusive observation of any one particular class of objects belonging to this or that art or faculty, but are indifferently applicable to all. Such is the example quoted by Aristotle as *ὁ τοῦ μᾶλλον καὶ ἧττον τόπος*. Of this in the Topics he gives four cases, of which the following may be taken as a specimen. "If the more likely assertion on any subject be untrue, the less likely is probably untrue likewise." A general maxim of this

<sup>k</sup> Rhet. i. 2. 20, 21.

kind is obviously available *περὶ δικαίων καὶ φυσικῶν καὶ περὶ πολιτικῶν, καὶ περὶ πολλῶν διαφερόντων εἶδει.*

Secondly, it may be observed that the Enthymeme is not necessarily confined to the Rhetorical kind of matter. A syllogism from likelihoods or signs, whatever be the subject, is an Enthymeme. In like manner, any syllogism in probable matter may become an instrument of Dialectic reasoning; whether it be based on the general probabilities which Dialectic materially furnishes, or on more limited assumptions drawn from special observations. The Physician, for example, within the field of his own experience, may know that in nine cases out of ten where a patient exhibits certain symptoms, the disease terminates fatally. The student of history may learn that in the majority of cases revolution leads to anarchy, and anarchy is suppressed by despotism. Either of these may become the basis of a reasoning process in probable matter, but the Syllogism or Enthymeme is not, properly speaking, Dialectical or Rhetorical, but Medical or Political. And although there is nothing in the Dialectical or Rhetorical Method that prevents its being applied to these or any other special subjects, yet in proportion as any one so applies it, Aristotle regards him as departing from the legitimate *matter* of Dialectic or Rhetoric, and adopting that of some definite Art or Science<sup>1</sup>. For the same reason, when he speaks of the special application of Rhetoric to Political deliberation, he warns us that its object matter must not be considered as that of Rhetoric *per se*, but as primarily and properly belonging to Politics, secondarily only to Rhetoric in one of its practical applications<sup>m</sup>.

<sup>1</sup> Rhet. i. 2. 21. Ταῦτα δέ, ὅσῳ τις ἂν βέλτιον ἐκλέγῃται τὰς προτάσεις, λήσῃ ποιήσας ἄλλην ἐπιστήμην τῆς διαλεκτικῆς καὶ ῥητορικῆς· ἂν γὰρ ἐντύχῃ ἀρχαῖς, οὐκέτι διαλεκτικὴ οὐδὲ ῥητορικὴ ἀλλ' ἐκείνη ἔσται ἣς ἔχει τὰς ἀρχάς.

<sup>m</sup> Rhet. i. 4. 4, 5.

A few words in conclusion on the origin of the name Enthymeme. That its etymology is to be found in *ἐν* and *θυμός*, is undeniable; but only in the same degree as is also true of *ἐνθυμεῖσθαι*, *ἐνθύμιος*, and other cognate terms. But that it has no special reference to a premise *in the mind*, is evident; firstly, because *θυμός* in the Aristotelian phraseology is not "the mind," and has nothing to do with the expression or suppression of premises; secondly, because the word *ἐνθύμημα* occurs in writers earlier than Aristotle, and before it could have assumed its technical meaning. To ascertain the true derivation, however, is not so easy as to refute a palpably absurd one. If, however, we were compelled to make a suggestion, the following, though not confidently put forward, has at least the merit of not being positively ridiculous. *Ἐνθύμημα* seems originally to have signified an object of consideration, or a matter proposed as worth considering. Such is the leading idea in the two passages of Sophocles in which it occurs. "Your words, *duly considered*, are calculated to inspire fear<sup>a</sup>." "Your own misfortunes, *properly weighed*, may teach the evil results of a violent temper<sup>o</sup>." The transition from this to an *argument of probability*, a suggestion, though not demonstrative, yet deserving attention in practical questions, is easy and natural enough.

<sup>a</sup> CEd. Col. 292.

<sup>o</sup> CEd. Col. 1199.

## NOTE F.

## ON INDUCTION.

INDUCTION, as far as it is a Logical process at all, is equally formal with Syllogism; though proceeding in the inverse order; viz. from the aggregate of individuals to the universal whole constituted by them; instead of from the whole to the several individuals contained under it. It is defined by Aristotle, "proving the major term of the middle by means of the minor\*;" in which definition, the expressions *major*, *middle*, and *minor*, are used relatively to their *extension*, to designate respectively the attribute proved, the constituted species of which it is proved, and the aggregate of individuals by which the species is constituted. The form in which the Inductive Reasoning<sup>b</sup> naturally appears, exhibits an apparent, though not a real, resemblance to the *third* figure of Syllogism. Thus:

X, Y, Z, (minor,) are B (major);  
 X, Y, Z, are all A (middle); therefore,  
 All A is B.

The resemblance to the third figure is apparent only; the true distinctions being, 1. That in the minor premise of the Induction, the copula does not represent the subject as *contained under*, but as *constituting*, the predicate. 2. That in consequence of this distinction,

\* Τὸ διὰ τοῦ ἑτέρου θάτερον ἕκρον τῶ μέσῳ συλλογίσασθαι. Anal. Pr. ii. 23. 2.

<sup>b</sup> In a loose sense, Aristotle calls it ὁ ἐξ ἐπαγωγῆς συλλογισμός, where the word does not denote the syllogism proper, or reasoning from the universal whole to the contained parts, but is extended to formal reasoning in general. In like manner, in Rhet. ii. 25. 8. he speaks of the Enthymeme as including Example.

an universal conclusion is logically drawn in this form, which is not valid in the third figure of Syllogism.

We see then, that in the Inductive process the Copula is ambiguous, expressing in the major premise and in the conclusion, the relation of a contained part to a containing whole; in the minor premise, that of constituting parts to a constituted whole. This ambiguity has been remarked as a deficiency in technical language<sup>c</sup>; but there is no term sufficiently naturalized in Logic to serve as a substitute to express the latter relation.

On Induction, as exhibited above, it may be remarked,

I. That the distinction between a perfect and an imperfect Induction is extra-logical. Logic recognises no inference that is not necessitated by the Laws of Thought: and therefore it must be presumed that the Induction is *perfect*, i. e. that the Individuals mentioned are in reality the whole constituents of the species, before the Inductive Inference can come in any way within the province of the Logician. To inquire what is the warrant for this presumption; to ask what amount of observation will warrant us in assuming X, Y, and Z, to be *all* the members of the class A; is like asking in syllogistic reasoning, how do we know that the premises are true? undoubtedly a most important question, but not to be answered by Logic. So also any compromise with material probability, any statement of the individuals as *samples* or *adequate representatives* of their class<sup>d</sup>, is a surrender of the essential principle of Logical Reasoning: the parts *are* absolutely the whole; or the inference is, logically speaking, worthless.

It is manifest, however, that the Induction may be easily stated in such a form, as to transfer the material

<sup>c</sup> Edinburgh Review, No. 115. p. 229. From this admirable Article the greater part of the materials for the present note have been derived.

<sup>d</sup> Whately's Logic, p. 260. (Sixth Edition.)



difficulty from the minor premise to the major; in which case the question may be satisfactorily answered by that Art or Science to which the Proposition materially belongs. Thus the example given by Aldrich might be stated as follows:

The magnets which I have observed, and also those which I have not observed, attract iron;

The magnets which I have observed, and those which I have not observed, are all magnets;

Therefore, all magnets attract iron.

In this mode of stating, the minor premise is undeniably true. The doubtful part of the major, relating to the properties of unobserved objects, must be determined by the analogies of the Science to which the objects belong, and by the *material* inquiry, what kind of samples or specimens will warrant our asserting of others what we have observed in them.

II. It is precisely in the mode of answering this material inquiry, that the whole difference lies between the ancient *Inductio per enumerationem simplicem*, and that Interpretation of Nature insisted upon by Bacon. The disciple of the former method, when asked, How do you know that other specimens of your class possess the same property as these? will reply, Because I have never seen one which does not possess it. The Baconian, on the other hand, will answer, Because I have selected such instances as give evidence of an universal law: I have examined those specimens of the class which have nothing in common, except the possession of the property in question: I have compared them with objects not possessing it, and I find its absence always accompanied by that of one of the essential attributes of this class\*.

\* Bacon, Nov. Org. lib. ii. Aph. x sqq. xxii sqq.

A recent writer has exhibited the Inductive Method of Socrates as a specimen of that *Inductio per enumerationem simplicem* which the Baconian philosophy has superseded<sup>f</sup>. But it has been before observed that the Socratic reasoning is not properly *Induction*, but *Example*<sup>g</sup>. It is inconclusive, not because it is an Induction by Simple Enumeration, but because it is no Induction at all. The Simple Enumeration, if complete, will form the basis of what, logically speaking, is a valid Induction; and it is precisely because the Socratic Method does not pretend to completeness, that Logic does not recognise the inference. It is true that in Simple Enumeration this completeness is often difficult, sometimes impossible to attain. And it is the additional security on this point that constitutes the chief merit of the Baconian process. But this is a *material*, not a *logical*, merit. It affects our *ground of confidence* in the truth of certain propositions, not the *nature of the inference* from those propositions assumed to be true. Neither in Induction nor in Syllogism does the Organon of Bacon supersede that of Aristotle. "Each," as Sir W. Hamilton observes, "proposes a different end; both, in different ways, are useful<sup>h</sup>." The ancient Philosopher considers "the laws under which *the subject* thinks;" the modern, "those under which *the object* is to be known." The Induction of Bacon, as furnishing more accurate rules for physical investigation, may supersede the Induction of Socrates; for the latter owes its validity solely to the *matter*. It cannot affect the Induction of Aristotle, of which the validity depends solely on the *form*.

The perversions of the Aristotelian Induction by Aldrich and Archbishop Whately have already been noticed. On

<sup>f</sup> Lewes, Biographical History of Philosophy, vol. i. p. 215.

<sup>g</sup> Introduction, p. xiii.

<sup>h</sup> Reid's Works, p. 712.

this point it will be sufficient to observe, that any attempt to reduce Induction to Syllogism, in the strict sense of the term, must commence by inverting the whole operation ; stating as a preliminary assumption that which is really the conclusion of the Inductive process. It moreover leaves us no alternative between converting mere empirical judgments into self-evident axioms, or destroying the whole foundation of reasoning, by commencing with a Syllogism whose premises themselves must be proved by another Syllogism, and so on *ad infinitum*.

The Aristotelian Induction proper has been described as an *analytical*, its counterpart, Syllogism, as a *synthetical*, process ; and the two have respectively been identified with the λόγοι ἐπὶ ταῖς ἀρχαῖς and ἀπὸ τῶν ἀρχῶν of Aristotle<sup>1</sup>. And this is in one sense correct, though, according to a various notion of whole and part, the terms Analysis and Synthesis have perpetually been interchanged with each other. According as we look to the *comprehension*, or to the *extension* of the notions, we may regard the Genus as a part of the Species, or the Species as a part of the Genus. Hence the notions of Synthesis and Analysis, of the composition of parts into a whole, and the resolution of a whole into parts, will, as we adopt the one or the other point of view, be inverted. We have previously spoken of Induction as an inference from the constituting parts to the constituted whole. In this respect it is *synthetical*. To regard it as analytical, we must adopt the *metaphysical* relation of part and whole as simpler or more complex notions. In this point of view, Division and Definition are respectively the Synthesis and Analysis of notions, *as expressed in simple terms*. In the former, we combine Genus and Differentia into Species ; in the latter, we resolve Species

<sup>1</sup> See Michelet in Eth. Nic. p. 25.

into Genus and Differentia. A similar relation exists between the processes of uniting Accidents to a Species, in distinguishing its several individuals, and abstracting the Specific notion from the Accidents in the formation of Universals. Syllogism and Induction in like manner are respectively the Synthesis and Analysis of the same notions *when forming the subjects of a judgment*. For on examination of the first figure, which is the natural form of Syllogism, it will be seen, that it proceeds, by *division* of the middle term, to predicate of the several Species, what was previously predicated of the Genus. Induction, on the other hand, in its natural form, proceeds by a process of *abstraction*, from the individuals constituting a Species to their common Species so constituted.

As regards the etymology of the name; both the Greek *παγωγή*, and its Latin equivalent *Inductio*, seem to have been originally applied with reference to the Socratic *accumulation* of instances to serve as an antecedent for establishing the required conclusion. The Platonic use of *ἐπάγειν* will support this view<sup>k</sup>. Such is also clearly the interpretation of Cicero. “Hoc in genere præcipiendum nobis videtur, primum, ut illud quod *inducemus* per similitudinem, ejusmodi sit, ut sit necesse concedi; nam ex quo postulabimus nobis illud quod dubium sit concedi, dubiam esse idipsum non oportebit. Deinde illud ejus confirmandi causa fiet *Inductio*, videntum est ut simile iis rebus sit, quas res, quasi non dubias, ante *induxerimus*<sup>l</sup>.” Quintilian, however, applies the term rather to the *bringing in* as an inference, of the

<sup>k</sup> Cratyl. p. 420. d. Ταῦτα ἤδη μοι δοκεῖς, ὦ Σώκρατες, πικνότερον ἐπάγειν. Where Heindorf renders, “Confertius quam priora afferre, ita ut alterum alteri addas, in singulis nihil immorans.” The substantive *ἐπαγωγή* has a very different sense in Plato; e. g. Leg. xi. 933. d. Cf. Ruhnken, Timæus.

<sup>l</sup> De Inventione, i. 32.

question to be proved. "Nam illa, qua plurimum Socrates est usus, hanc habuit viam; cum plura interrogasset, quæ fateri adversario necesse esset, novissime id, de quo quærebatur *inferebat*, cui simile concessisset; id est *inductio*™." Another meaning of the Greek *ἐνδύειν* and *ἐπαγωγός*, as well as of the Latin *inducere* and *inductio*, might seem to point rather to the persuading and influencing the mind of the hearer. But the first derivation is preferable. The question, however, as far as Aristotle is concerned, is not of any great consequence. For, as that Philosopher did not invent the name, but only modified the usage of a term current among his predecessors, the etymology will be of little service towards illustrating the notion which he attached to it.

™ Inst. Orat. v. 11.

## . NOTE G.

## ON ARISTOTLE'S HYPOTHETICAL SYLLOGISMS.

THAT the συλλογισμοὶ ἐξ ὑποθέσεως of Aristotle are not identical with those which, since the time of Theophrastus and Eudemus, have been received in Logic as Hypothetical Syllogisms, is now generally admitted\*. The word Hypothetical is never by Aristotle opposed to Categorical, but to ostensive (δεικτικός<sup>b</sup>); and he remarks that the *Syllogistic portion* of the reasoning in Hypothetical Syllogisms is ostensive, and requires no reduction; but that the determination of the original question is not affected by Syllogism at all, and cannot be exhibited in Syllogistic form. The meaning of this may be clearly explained by examples.

Of the Hypothetical Syllogism, two principal kinds are mentioned by Aristotle. One is the ἀπαγωγή εἰς τὸ ἀδύνατον: the other is a Syllogism of which the conclusiveness depends entirely on agreement between two contending parties, and which is therefore chiefly serviceable in dialectic disputation. The latter may be exhibited as follows.

The original question being to prove that some A is not B; the contending parties agree to the *hypothesis*, that if some A is not C, it is not B. The reasoning proceeds thus:

No X is C;	} (συλλογισμὸς ἐξ ὑποθέσεως.)
All X is A;	
Therefore, Some A is not C.	

And then, *in consequence of the previous agreement, but*

\* We must except M. St. Hilaire, who professes to discover the ordinary Hypotheticals in Anal. Prior, i. 44. 1. But the text of Aristotle will hardly warrant the assertion.

<sup>b</sup> See Anal. Pr. i. 23. 2.

*not of the Syllogism*, it is allowed that some A is not B. The Syllogism in form is an ordinary Categorical in the third Figure; the Conclusion, however, not being the original question, but the antecedent of a Hypothetical Proposition, of which the question is the Consequent\*.

The ἀπαγωγή εἰς τὸ ἀδύνατον is also Categorical, so far as it is Syllogistic. In this, the Conclusion syllogistically proved is a falsehood; the original question being inferred only by Hypothesis, because a falsehood results from the assumption of its contradictory<sup>d</sup>. The *Hypothesis* in this case is, that the contradictory is true<sup>e</sup>. Thus, if it be required to prove that some A is not B, we reason from the assumption of the contradictory,

All A is B;	}	(συλλογισμὸς ἐξ ὑποθέσεως.)
All C is A;		
Therefore, All C is B.		

The Conclusion being supposed to be a known falsehood.

\* Ἐν ἅπασιν γὰρ ὁ μὲν συλλογισμὸς γίνεται πρὸς τὸ μεταλαμβανόμενον, τὸ δ' ἐξ ἀρχῆς περαίνεται δι' ὁμολογίας ἢ τινος ἄλλης ὑποθέσεως. Anal. Pr. i. 23. 11. Τὸ μεταλαμβανόμενον is explained by Alexander as applying to the conclusion of the syllogism, because it is taken in a different manner from that in which it was originally enunciated; being at first part of a conditional agreement, and afterwards a categorical conclusion. For this reason, the syllogism is said to be κατὰ μετάληψιν. Anal. Pr. i. 29. 5. Were it not for this authority, it would seem simpler to interpret μετάληψιν merely "change of question;" the disputant turning from the original question to the proof of another on which it is supposed to depend. Concerning the other kind of hypothetical syllogisms mentioned in the same passage, those κατὰ ποιότητα, we have no data for even a plausible conjecture. M. St. Hilaire's explanation is forced. Philoponus, (Scholia, p. 178, b. 9.) says it is a syllogism, ἐκ τοῦ μᾶλλον, ἢ ἐκ τοῦ ἥττον, ἢ ἐκ τοῦ ὁμοίου.

<sup>d</sup> Anal. Pr. i. 23. 8. Πάντες γὰρ οἱ διὰ τοῦ ἀδυνάτου περαίνοντες τὸ μὲν ψεύδος συλλογίζονται, τὸ δ' ἐξ ἀρχῆς ἐξ ὑποθέσεως δεικνύουσιν ὅταν ἀδυνάτου τι συμβάλῃ τῆς ἀντιφάσεως τεθείσης. I have substituted a mere symbolical syllogism for the instance given by Aristotle, on account of its intricacy, and the length requisite to expand it. The reader will find it explained by Waitz, vol. i. p. 430.

<sup>e</sup> Anal. Pr. i. 29. 3. Πάλιν εἰ δεικτικῶς συλλελογίσται τὸ Α τῷ Ε μηδὲν ὑπάρχειν, ὑποθεμένοις ὑπάρχειν τινὶ διὰ τοῦ ἀδυνάτου δειχθήσεται οὐδὲν ὑπάρχον.

This mode of reasoning, as exhibited by Aristotle, does not directly appear in the same form as the former. For in this the hypothesis is a *premise*; the conclusion being the impossibility which has not been previously enunciated. In the former, the premises are both new assumptions; the conclusion being the antecedent of the conditional proposition which was agreed upon as a hypothesis. Both, however, agree thus far, that the syllogistic portion of each does not differ in form from an ordinary Syllogism; and that in neither is the original question syllogistically proved.

The notices of these Syllogisms in Aristotle are, it must be confessed, sufficiently scanty. Thus much, however, may fairly be gathered. Firstly, that, as regards form, they are merely the common Categorical Syllogisms applied to a particular purpose. Secondly, that their conclusiveness, as regards the original question, is by way of *material*, not of *formal*, consequence. The syllogism by agreement obviously refers to dialectic disputation, and furnishes the grounds for a mere *argumentum ad hominem*, in consequence of a previous admission. Apart from this special application, which does not appear in the syllogism, the proof amounts to this :

No X is C;

All X is A;

Therefore, Some A is not C.

Therefore, (by material consequence,) Some A is not B.

In the *ἀπαγωγή εἰς τὸ ἀδύνατον*, the proof is of the same character. It has indeed no special reference to Dialectic, and is frequently employed in demonstration<sup>f</sup>, Aristotle's

<sup>f</sup> For the principle of contradiction may be assumed as self-evident, without any convention between disputants. And in this lies the principal difference between the *deductio ad impossibile* and the syllogism of agreement. See Anal. Pr. i. 44. 3.



own example being taken from Geometry. But still its connexion with the original question is not formal, but material; for we assume,

All A is B;

All C is A;

Therefore, All C is B.

And this conclusion, from material grounds, we know to be false. We also know (materially again) that the minor premise is true; and all that is logical in the process is the consequent decision that the major must be false; and hence by the principle of contradiction that the original question is true.

But one step only is wanting, to convert these material consequences into formal ones. We have in the *συλλογισμὸς ἐξ ὁμολογίας* clearly the germ of the Conditional Syllogisms of Theophrastus. It needs but to commence with the original hypothesis, not as a mere dialectic convention, but as a Proposition having its own objective value, and we have at once a logical argumentation, not in categorical form, but equally valid, to which the Aristotelian specimen is related merely as a prosyllogism supporting one of the premises. This done, no great sagacity is required to see that the prosyllogism may in this, as in any other case, be omitted or not, according to the material character of the premise which it supports.

To the *ἀπαγωγή εἰς τὸ ἀδύνατον* may in like manner be traced the origin of the Disjunctive Syllogism. The most natural proceeding in this case is to state the two contradictory Propositions as Alternatives, one of them being disproved by a prosyllogism.

Either some A is not B, or all A is B; in which case

All C is A;

Therefore All C is B.

This conclusion being manifestly false, we have no choice but to admit the other alternative. The pro-

syllogism in this case, as in the former, may be omitted, if the falsehood of the alternative is evident without it. We have thus the Disjunctive Syllogism.

We may agree therefore with M. St. Hilaire thus far, that though the form of the Hypothetical Syllogism is not explicitly exhibited in the extant writings of Aristotle, we have nevertheless the data from which it needs but one step to develop it. Whether that step was taken by Aristotle himself in a lost work, or supplied by his disciples, is a point of little consequence. External testimony is decidedly in favour of the latter supposition, a testimony which the most zealous admirer of the Stagirite need not be very solicitous to overthrow. The subsequent discovery, if such it be, only furnishes an additional illustration of the philosopher's own language at the close of his logical labours. Μέγιστον γὰρ ἴσως ἀρχὴ παντός, ὥσπερ λέγεται διὸ καὶ χαλεπώτατον· ὅσω γὰρ κράτιστον τῇ δυνάμει, τοσούτω μικρότατον ὃν τῷ μεγέθει χαλεπώτατόν ἐστιν ὀφθῆναι. Ταύτης δ' εὐρημένης ῥᾶον τὸ προστιθέναι καὶ συναύξειν τὸ λοιπὸν ἐστίν.

## NOTE H.

## ON THE DEMONSTRATIVE SYLLOGISM.

SCIENTIFIC knowledge (τὸ ἐπίστασθαι), except when of axiomatic principles<sup>a</sup>, requires a conviction of the necessity of the proposition known, and a knowledge of its cause<sup>b</sup>. This is produced by the Demonstrative or Scientific Syllogism, which, according to Aristotle's definition, is ἐξ ἀληθῶν καὶ πρώτων καὶ ἀμέσων καὶ γωρηματιῶν καὶ προτέρων καὶ αἰτίων τοῦ συμπεράσματος<sup>c</sup>. As the conclusions of this Syllogism are necessary, so must also be the premises; this necessity consists in their being *per se*, in either the first or the second sense of that expression<sup>d</sup>. If any of these conditions are not complied with; e. g. if the premise, though containing

<sup>a</sup> In the strict sense of the terms, ἐπίστασθαι is said of necessary truths which we receive by deduction from higher truths; νοεῖν, of those which we receive as evident of themselves. Hence the principal meaning of the corresponding terms, ἐπιστήμη and νοῦς. The latter, however, or rather its result, is sometimes called ἐπιστήμη ἀναπόδεικτος. Cf. Anal. Post. i. 3. 2, 3. i. 33. 1. ii. 19. 7. Eth. Nic. vi. 9. 9. The word ὅροι, in the first and last of these places, does not mean, as Pacius explains, simple terms, but, as M. St. Hilaire renders, "les propositions immédiates," i. e. axioms—the limits from which Demonstration commences.

<sup>b</sup> Anal. Post. i. 2. 1.

<sup>c</sup> Anal. Post. i. 2. 2. By *first* and *immediate* are here meant the same thing; i. e. not demonstrable by a middle term from any higher truth; γνωριμώτερα sc. φύσει, not ἡμῶν, i. e. more universal.

<sup>d</sup> Of necessity, three degrees are enumerated, Anal. Post. i. 4. Κατὰ παντός, καθ' αὐτό, and ὅ αὐτό; usually rendered, *de omni*, *per se*, and *quatenus ipsum*. Of *per se*, as applied to a proposition, four senses are given. 1. When the predicate is part of the definition of the subject. 2. When the subject is part of the definition of the predicate. 3. When existence is predicated of a substance. 4. When the subject is the external efficient cause of the predicate. Propositions in Demonstration proper must be *per se* either in the first or second meaning. See Anal. Post. i. 8. 1.

the cause of the conclusion, is not the first cause, (in which case the syllogism is not ἐξ αὐτόων\*,) or if the premise be an effect and not a cause of the conclusion, or if the premise, though immediate, be a remote and not a proximate cause of the conclusion,—under these circumstances, there is no Demonstration, in the proper sense of the term, as we only know the fact, but not the cause†.

From the above data, the scholastic successors of Aristotle have constructed the following specimen of *demonstratio potissima*.

*Omne animal rationale est risibile;*  
*Omnis homo est animal rationale: ergo*  
*Omnis homo est risibilis.*

In this syllogism all three propositions are *per se*; the major premise and the conclusion in the second manner; for the subject *homo*, and consequently *animal rationale*, form part of the definition of the attribute *risibile*: the minor premise is *per se* in the first manner; for *animal rationale*, its predicate, is the definition of *homo*.

In all the propositions of this Demonstration, the predicate and subject are coextensive, and the pro-

\* From this it may fairly be inferred that the *demonstratio propter quid sit per causam non primam*, would not alone be regarded by Aristotle as a Demonstration, though it may form a subordinate portion of a complex Demonstration. The ambiguity of the word *ἐμεσος*, which has partly led to the discrepancies on this point, has been explained already.

† See Anal. Post. i. 13. The distinction between *demonstratio propter quid potissima* and *non potissima* cannot fairly be attributed to Aristotle. The whole of the chapters of the first book of the Posterior Analytics, from the first to the thirteenth inclusive, treat of one kind of Demonstration only. The passages in the *second* book, (ch. 17 and 18.) which seem to favour the distinction, are treating only of the inferior sense of Demonstration, in which it is applicable to τὰ πεφυκῶτα ὡς ἐπὶ τὸ πᾶν. Cf. Anal. Pr. i. 13. 5, 6. An. Post. i. 8. 3. i. 30.

position simply convertible. This is requisite, in order to comply with the condition of *quatenus ipsum*.

This Demonstration is exceedingly satisfactory, if we are only allowed to assume all the conditions on which its validity depends; viz. 1. that risibility does flow as an effect from rationality as a cause; 2. that the major premise, in which this causation is asserted, is an axiomatic principle, cognoscible *a priori*, and, as such, carrying with its cognition, the conviction of necessity; 3. that the conclusion is not a mere repetition, in different words, of the major premise; *homo* and *animal rationale* being identical; 4. that any Demonstration acknowledged to be valid can be resolved into the above form.

But waiving the consideration of these questions, which are more easily asked than answered<sup>s</sup>, we may find a simpler way of testing the *demonstratio potissima*, by going back to the original authority. For Aristotle's examples are principally taken, as is natural, from the Mathematics; and it is to a Geometrical theorem that the tests of καθ' αὐτό and ἡ αὐτό are expressly applied<sup>h</sup>. Can it be believed, then, that Aristotle regarded the following as a correct analysis of Geometrical Demonstration?

Every rectilineal figure of three sides has its angles equal to two right angles;

Every triangle is a rectilineal figure of three sides; therefore

Every triangle has its angles equal to two right angles.

<sup>s</sup> "Si scrupulosius inquiretur in rem hanc; Num qua sit *essentialis connexio* inter rationalitatem et risibilitatem, quo sit ea *propria causa* hujus, seu *causa per se*; ut Rationalitas, propter ipsam sui *Essentiam*, non possit esse absque Risibilitate; neque hæc absque illa: et quidem *immediata*, absque interventu aliûs considerationis qua connectatur; atque *adequata*, ut ad omnes rationales extendatur atque ad hos solos: subtilior forsân esset inquisitio quam ut ei facile satisfiat." Wallis, Log. lib. 3. cap. 22.

<sup>h</sup> Anal. Post. i. 4. 6. Καὶ τῷ τριγώνῳ ἡ τρίγωνον δύο ὀρθαί· καὶ γὰρ καθ' αὐτὸ τὸ τρίγωνον δύο ὀρθαῖς ἴσον.

It is not denied that there are passages in Aristotle which may seem to countenance this interpretation; but there are others so palpably inconsistent with it that we are compelled to seek for a new explanation of the former.

In the first place, Aristotle distinctly condemns the assumption of Definitions as a *Petitio Principii*<sup>1</sup>. In the second place, he says that Demonstration proceeds from *axioms*, and cites as a specimen of the latter, "If equals be taken from equals, the remainders are equal<sup>2</sup>." These axioms, he says, are common to many classes of objects; but, in any single Science, need only be assumed to an extent commensurate with the object-matter of that Science. The above axiom, for example, is true of other things besides Geometrical Magnitudes, but it is sufficient for the Geometer to assume it as true of these only.

Now if an axiom of this kind be the major premise in a Demonstration, it is manifest that its predicate will also be the predicate of the Conclusion; and that the logical form of that Conclusion will be, not "All triangles are figures having their angles equal to two right angles," but, "Triangles and figures having their angles equal to two right angles are equal to each other."

The immediate Syllogism from which this proposition is proved by Euclid, may be logically stated as follows:

"Magnitudes equal to the adjacent exterior and interior angles of a triangle are equal to each other;  
The three interior angles and two right angles are equal to the adjacent exterior and interior angles;  
Therefore, they are equal to each other."

<sup>1</sup> Top. viii. 13. 2.

<sup>2</sup> Anal. Post. i. 7. 1. i. 10. 2.

The major premise of this Syllogism is an immediate deduction from the first axiom; thus:

“Magnitudes which are equal to the same are equal to each other;

Magnitudes equal to the adjacent exterior and interior angles are equal to the same;

Therefore, they are equal to each other.”

That the true syllogistic analysis of Geometrical Demonstrations will always be in this form, the axioms standing as major premises, and the constructions in each case furnishing the proper minor, is evident. It only remains to see whether the text of Aristotle can be accommodated to this interpretation as well as to the other.

With some passages it evidently tallies much better. The places in which the axioms are mentioned in connexion with demonstration have never been satisfactorily explained on the scholastic interpretation<sup>1</sup>. There are others which *prima facie* appear to favour the latter; but when both interpretations require some straining of Aristotle's language, it is due to the memory of the Father of Logic to give him the benefit of that which does not convict him of flagrant error in the application of his own principles.

Referring back to the Syllogism above given, the major

<sup>1</sup> The difficulty is evaded rather than surmounted by distinguishing immediate propositions from axioms, and saying that the latter are employed in demonstration *virtually* but not *actually*. Aquinas, Opusc. 48. de Syll. Dem. cap. 6. Cf. Zabarella, in I. An. Post. Cont. 57, 58. Crakanthorpe, Log. lib. iv. cap. 1. For in the first place, Aristotle expressly calls the axioms immediate principles of syllogism, and principles *from which* we demonstrate. In the second place, any principle which virtually enters and confirms the premises of a demonstration must, if the syllogistic theory be worth any thing, be capable of syllogistic connexion with the premises which it confirms: and until this connexion is formally exhibited, no demonstration can be logically complete.

premise may fairly be regarded as *per se*; the subject forming part of the definition of the predicate. For Equality, in the limited sense in which it is employed in Geometry, is a property of Magnitudes; and the latter, as the first and proper subject, will appear in the definition of Geometrical Equality. This definition has been found by some Geometers in the eighth axiom of Euclid; "Magnitudes which coincide are equal;" which, stated in the Aristotelian form, would be, "Equality is the Coincidence of Magnitudes."

The minor premise may also be considered as *per se*. For our definition of a right angle is, that it is half the sum of the two adjacent angles formed by one straight line with another; and our notion of two right angles is, that of the sum of the same two adjacent angles. As regards the Conclusion, we need not trouble ourselves with reducing it to the requisite conditions, inasmuch as it is expressly said by Aristotle to comply with them. This compliance does not directly appear in the only form in which the proposition can be syllogistically proved; but in the equipollent statement, that the triangle is a figure of which the interior angles are equal to two right angles. The predicate in this case states a property of the triangle, in the definition of which property, if any be attempted, the proper subject must be included.

A demonstration of this kind certainly falls short, in some respects, of the scholastic model. The predicate and subject in each proposition, *as stated*, are not convertible; and the middle term is not a definition of the minor. But of these requisitions, the first seems to be founded on an erroneous interpretation of Aristotle, according to which that Philosopher is supposed to speak of the Propositions as they appear when strictly enunciated in logical form; not (as seems more probable)



of the same Propositions as ordinarily stated by the Geometer<sup>m</sup>. With regard to the second condition, the text of Aristotle does not warrant its imposition. He says indeed, that the middle term in demonstration must be a definition of the *major*<sup>n</sup>; and the precept is intelligible enough, if we rightly understand his theory of the Definition of Attributes. As regards the minor term, it would be difficult to produce a single passage where this condition is clearly laid down as a law of Demonstration; and there is more than one with which it would be no easy task to reconcile it.

If it be thought somewhat over-bold to repudiate positions which so many eminent Logicians have regarded as legitimate deductions from the text of Aristotle; it must be remembered that we have other data for interpretation besides the mere weight of authority. Aristotle's theory of demonstration is principally framed with reference to Geometry: the Scholastic examples, on the other hand, are Physical. The mediæval state of Physical science was perhaps such as to justify, or at least to account for, the Logical and Metaphysical fictions connected with it; and to give a seeming validity to the most potent demonstration of Risibility as an emanation from Rationality; though that emanation was never dreamed of by Aristotle, and will scarcely claim implicit belief in the present day. But it is not merely because the revolution affected in this branch of Science has invalidated the individual example, that the interpretation is objected to; but because the words of Aristotle himself expressly direct us to another criterion. The Demonstrations of Geometry are still extant in the

<sup>m</sup> In this way we may interpret such passages as Anal. Post. i. 4. 6. i. 5. 6. ii. 17. 3.

<sup>n</sup> Anal. Post. ii. 17. 3. The meaning of this has already been explained. See note B.

same form in which they existed in the days of the Stagirite. Though Euclid himself, the oldest remaining Geometer, is a few years younger than Aristotle°, yet, except on the very improbable hypothesis that he was the original inventor of the whole contents of his elements, that work must be regarded as furnishing a fair specimen of the demonstrations treated of in the Posterior Analytics. By this touchstone, Aristotle and his interpreters may be tested. When any modern Herlinus or Dasypodius<sup>p</sup> shall exhibit a single demonstration of Euclid in the form of a scholastic *demonstratio potissima*, we may then recognise this foundling of the Schoolmen as the legitimate offspring of their master. Till that is done, we must continue to believe that Aristotle was sufficiently acquainted with the use of his own instrument, to be able to give a correct Logical Analysis of the Demonstrations of Geometry.

° Euclid flourished in the reign of Ptolemy Lagus, B. C. 323—283. This period, however, probably corresponds to the close, not to the commencement, of his life. This would make him partly contemporary with, though about thirty years junior to, Aristotle.

<sup>p</sup> Of the remarkable work of these two “zealous but thick-headed Logicians,” as Sir W. Hamilton calls them, I have not hitherto been enabled to procure a sight; but from the allusion to it by the same author, Reid’s Works, p. 702., it would seem that their analysis resembled the one given above. Indeed, it is not easy to conceive how it could be performed in any other way.

THE END.



# ERRATA.

- Page xii. Introd. last line, *for Schleiermcher's read Schleiermacher's*  
xiv. ——— line 3, *for essence of thing read essence of a thing*  
24. line 2, *for Subalternum read Subalternam*  
40. 12, *for hæ read hœc*  
63. 25, *for premisses read premises*  
67. 7, *for EIO read IEO*  
78. 9, *for obvia read obvise*  
94. 24, *for or E is F read nor E is F*  
96. 20, *for animality read risibility*  
99. 6, *for animus read animas*  
105. 12, *for sous read suos*  
ibid. 22, *for rationalis read risibilis*  
100. 21, *for θεωρητική read θεωρητική*  
12. 7, Appendix, *for admissible read inadmissible*  
55. 17, ——— *for παγωγή read ἐπαγωγή*  
57. 12, ——— *for affected read effected*



